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THE
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ALBANIA AND THE ALBANIANS*

By H. CHARLES WOODS

Although her people have obviously not been able to play any direct part in the war, the geographical and political importance of Albania is such that the history of and the conditions prevailing in that country are worthy of serious consideration today. Geographically this importance is due to the fact that Albania occupies a position which makes it the natural means of entry into and exit from a large part of the western half of the Balkan Peninsula. For this reason the northern part of the country, together with the ports of San Giovanni di Medua and Durazzo, are coveted by the Serbs, who desire, by securing possession of them, to obtain free access to the sea. Equally well, by its situation on the lower Adriatic, Albania practically commands the Straits of Otranto, and the government in control there would control the Adriatic to which they lead. It is this which makes Italy particularly interested in the future of Europe's latest principality and specially in that of its southern port, Valona, for that Power cannot afford to be menaced by the establishment there of a régime hostile to her natural development, her safety, and her very existence.

Closely bound up with these conditions are the facts that, for years, Austria has been working untiringly to bring about the augmentation of her influence in Albania and that Greece has been striving to denationalize the people domiciled across her frontier. The first country, actuated by the intense rivalry existing between her and Italy upon all questions connected with the Western Balkans and the Adriatic, has acted as the instrument of Germany, with the object of preparing the way for the realization of the Mittel Europa scheme. The Hellenic Government on the other hand, whilst nominally animated by religious motives, has really directed its policy toward nationalistic objects. The result is, therefore, that the Albanian question, which was nominally settled by the creation of an autonomous principality during the Balkan Wars, still remains one of the most important problems for solution at the end of the present conflagration. It is for

* A chapter from a forthcoming book entitled "The Cradle of the War: the Near East and Pan-Germanism."

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this reason, and particularly because the Allies and the United States are pledged to the principle of "government with the consent of the governed" or of "nationality" that we are bound to consider how this principle applies to Albania, whose people are entitled to expect the same consideration as any other small nationality.

Geographical Extent

Prior to the Balkan Wars and the loss of territory which was then suffered by Turkey, it was difficult accurately to describe what was meant by the geographical term "Albania." Whilst an official of the Turkish Government always refused to acknowledge the existence of a district known by the name, an Albanian, a Greek, a Bulgarian, or a Serbian would each define the boundaries of Albania in accordance with his own national aspirations. Lord Fitzmaurice (then Lord Edmond Fitzmaurice) in a despatch addressed to Earl Granville in the year 1880 described the district covered by the geographical expression Albania as that territory "which falls mainly within the two vilayets of Skutari and Yanina, but extends also in an easterly direction beyond the watershed of the mountains dividing the streams which fall into the Adriatic from those which fall into the Aegean Sea and includes portions of the vilayets of Monastir and of Kossovo."

The principality of Albania, if principality it can still be called, contains more or less the area which is thus indicated. Situated on the eastern side of the Adriatic and wedged in between Montenegro, Serbia, Greece, and the sea, this unhappy country is the child not of love but of hatred, for its creation was brought about by the rivalry which existed between the Great Powers, and particularly between Austria and Italy, rather than as a result of any feelings of friendship for the Albanians. Whilst the independence of the country was decided upon by the London Ambassadorial Conference in December, 1912, the frontiers have never been definitely fixed, or, more correctly speaking, they have never been observed by the neighboring countries, especially Greece. At the present time, therefore, it is impossible to say whether, in discussing Albania, we should include or exclude the large southern areas which are in dispute with Greece and parts of which have been in Italian hands since an earlier period of the war. If we include these in Albania and consider that country as it was established by the Great Powers, then it has an area of about 11,000 square miles and a population of approximately 800,000 souls. Measured from north to south it has a length of about 180 miles, and from west to east an approximate width, at its broadest part, of only 85 miles.

Character of the Country

The greater part of the country is mountainous. In the neighborhood of Skutari, in areas of central Albania, and in the south, there are, however,

fertile plains watered by various rivers which flow into the Adriatic. The people devote themselves almost entirely to agriculture, which is carried on with primitive implements, such as wooden plows. There are no home manufactures. Goat and sheep skins, which are exported, are dried by pegging them down upon the ground with wooden pegs. One of the most important exports from the country is the bitumen found at Selenitza near Valona. The mine is worked by a French syndicate, and the bitumen, which is of high quality, is transported to the port on pack animals across the hills for a distance of some twelve miles. Towns properly so called are few. Skutari, having a population of about 32,000 souls and constituting the capital of the north, is the only city which boasts

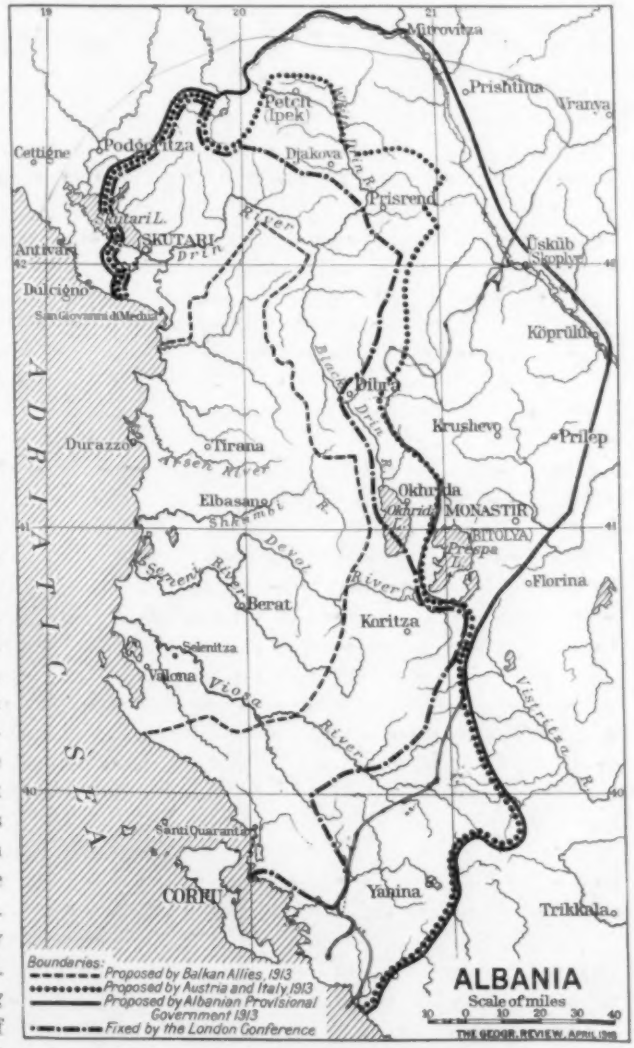

FIG. 1—Sketch map of Albania showing the various proposed boundaries and the boundary fixed by the London Conference of 1913. Scale, 1:2,900,000.

The boundaries are based on a map, 1:3,400,000, accompanying C. A. Dako: The Independence of Albania a Necessity for International Peace, *Yll'i Mengjezit* (*The Morning Star*), Vol. 1, No. 6, April 2, 1917, pp. 161-168 [an Albanian fortnightly published at Boston, Mass.]. For a somewhat different interpretation of the proposed boundaries, see the map (Pl. 33), 1:1,500,000, accompanying Antonio Baldacci: Der neue albanische Staat und seine Grenzen, *Petermanns Mitt.*, Vol. 59, 1913, Part I, pp. 221-222.

FIG. 2—Valley of the Shkumbi River near Broshka, about ten miles below Elbasan. (Figs. 2-9 from copyrighted photographs by the author.)

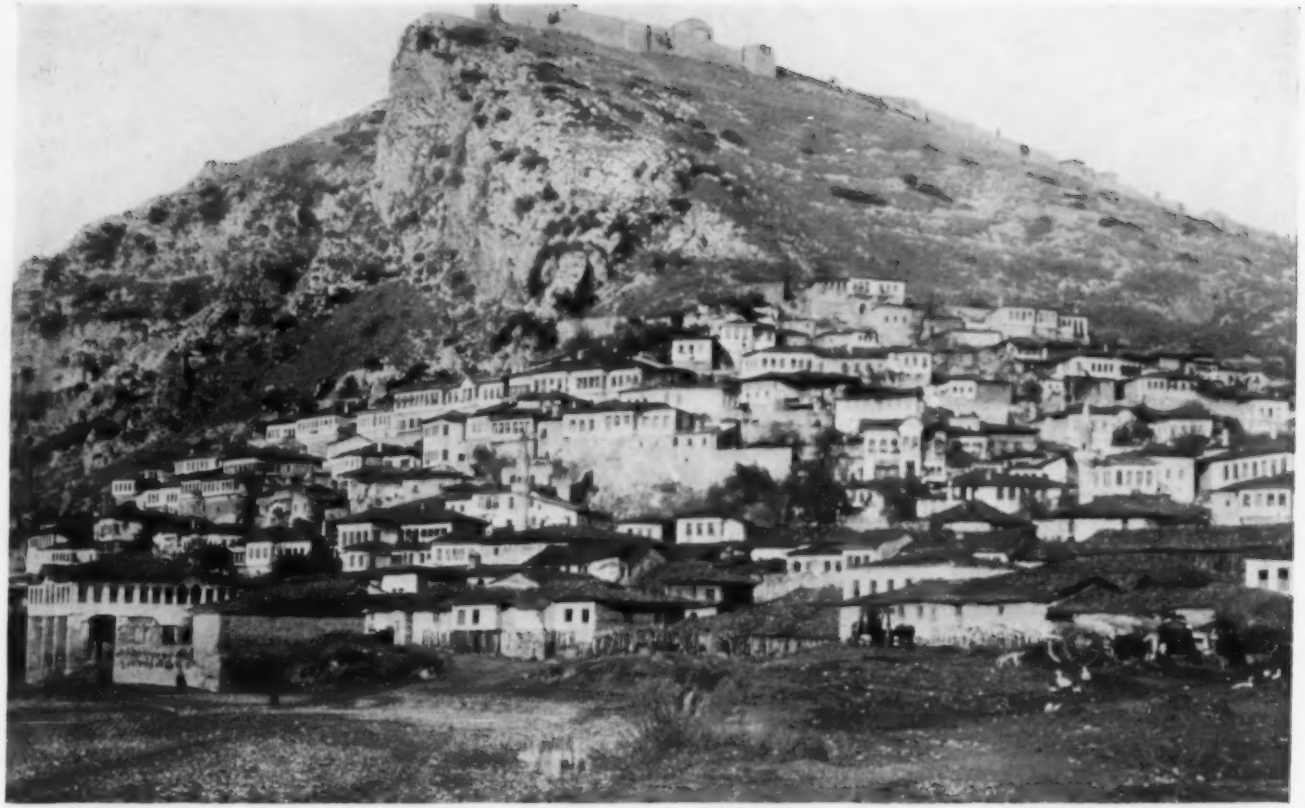

FIG. 3—Part of the town of Berat, showing the citadel.

more than 15,000 inhabitants. Durazzo, the so-called capital of the country and the former seat of the Prince's government, is built upon the site of the ancient Dyrrachion. It has a population of only 5,000. The city, which is located on the northern shore of a commodious bay, where it is almost always safe for ships to lie, is practically surrounded by rocks and by the sea, except upon the side where the promontory upon which it is built is joined to the mainland. Valona, now occupied by the Italians, is possessed of a fine bay. Its population is about 6,000 souls. Elbasan, situated in the heart of the country and in the Shkumbi valley, is the proper capital of the country, not only on account of its central position, but also because its inhabitants possess the most moderate political ideas and therefore voice what should be the general policy of a united Albania.

Nationality

From a local as well as from a national point of view, one of the most important questions connected with Albania today is that which concerns the nationality of its inhabitants. In Turkish times these people, unlike the other alien races which went to make up the European provinces of the Ottoman Empire, were not formed into a "millet" or religious "community." In other words, whilst the nationality of the Bulgarians and the Greeks was recognized as the result of the existence of the Bulgarian and the Greek Churches, the Albanians, having no such bond, were classed in the census entirely according to their religion. Thus, if an Albanian belonged to the Orthodox Church he was called a Greek, if he was a Moslem he was put down as a Turk. This meant not only that the gallant Shkypetars, as the Albanians call themselves, were never supported by intrigues adroitly hatched in various capitals but also that their territory was a prey to the aspirations of their neighbors. This is a question of supreme importance, for whilst up to a point Abdul Hamid encouraged the Greeks, the Bulgarians, and the Serbians of Turkey in their nationalistic and religious ideas, with the express purpose of causing strife between these elements of the population, the Turks—old and new—never left a stone unturned to subdue the Albanians, whose sentiments of nationalism and of patriotism are probably older, stronger, and deeper than those of any other Balkan people.

The Albanians are generally and probably accurately identified by impartial authorities as the descendants of the ancient Illyrians, who were simply the inhabitants of Illyria and who in their turn were the offspring of the Pelasgians—the first people to come to Europe. It was to their forefathers, the Albanians allege, that St. Paul referred when he said "Round about unto Illyricum I have fully preached the gospel of Christ." But little is known about these Illyrians except that they were slow to accept the civilization of the Greeks and Romans and that subsequently they were driven westward towards the shores of the Adriatic by the ad-

vancing hordes of Slavs. From the time of the Turkish conquest, which may be said to have been completed about the year 1478, and soon after the death of the famous Albanian hero Skanderbeg, until the Balkan Wars Albania formed part of the Ottoman Empire and was nominally ruled from Constantinople. But such were the strength and the feelings of nationalism of the people that throughout this period they really enjoyed a considerable amount of independence, being governed largely by unwritten laws administered by the local chieftains. In short, for centuries the Albanians occupied in Europe towards the government a similar position to that held in Asia Minor by the Kurds. Both races are religiously unorthodox, both races have been utilized by the Turks to support them in times of need, and prior to the re-establishment of the Ottoman constitution in 1908, the attitudes of both races towards European interference in the Turkish Empire were made use of by the central government as a threat to the Great Powers as each new program for reform was suggested at Constantinople.

Character of the People

The Albanians today are a warlike, lawless people, but nevertheless they have their own—and a very strict—code of honor and they are faithful even unto death. An Arnaut once engaged is not only a most trusty servant and loyal follower in the Near East, but he is the most useful protector of his employer in whatever difficulty may arise. Indeed, the honor of the people is such that if once they have entertained you in their houses, or if once they have given you a promise, you may be absolutely sure that nothing will be too great a sacrifice for them to make in order that that promise may be fulfilled. I well remember that on one occasion when I was traveling in Albania it was necessary to accomplish an extremely long journey in the course of one day. My guides and horsemen protested against my wish to do what they said was almost impossible. They finally agreed, however, and we started out on the morrow. These men walked hour after hour over the roughest of country, and we eventually accomplished my object, only because they went far beyond their bargain, even carrying me across rivers in the dark and protecting me against wild dogs in order that we might reach the house of friends before night. Compensation of course they got, but even compensation will not always ensure the honorable fulfillment of an agreement.

The Albanians are divided into two main groups, the Ghegs and the Tosks. The Shkumbi River, which enters the Adriatic halfway between the towns of Durazzo and Valona, and its picturesque valley, may be said to separate the country of the former from that of the latter. The Ghegs, or Northern Albanians, are, in their turn, made up of a number of warlike tribes, many of whom still live a feudal life. The Tosks, or Southern Albanians, are more civilized and perhaps less warlike than their northern

brothers. Their tribal system is much less well defined, but they owe their allegiance to local beys or chiefs, to whom they turn for guidance in all matters of importance.

Religion

Whilst foreign propaganda has done a good deal to excite the religious feelings of the people, the Albanians are not as a rule religious fanatics. At the present time about two-thirds of the Albanian population is Moslem. Of the remaining one-third the Christians of the north are Roman Catholics, whilst those of the south belong to the Greek Orthodox Church. This religious division is due to several historical facts. Originally the people were all Christians, many of them having been converted as early as the first century. In earlier times the Albanians belonged to the Orthodox faith, but about the middle of the thirteenth century many of the Catholic Ghegs of the north abandoned the Eastern for the Western Church, and at the time of Skanderbeg there was a further secession. After the arrival of the Turks, when the people were Christian in little but name, large numbers embraced Islam, from secular rather than from spiritual reasons, that is to say, because the position of a Moslem was in many ways a more privileged one than that of a Christian. There was a further secession in the seventeenth century for like causes. But whilst there is often strife between the different religious elements, owing generally to misunderstandings, the people are in principle and at bottom Albanians before they are either Moslems or Christians. Consequently whatever disputes take place are rather results of political or local squabbles than of innate religious differences. There are districts where the inhabitants are entirely Christian and others where they are exclusively Moslem. But the greater part of the country is more or less mixed. In the south there is less religious strife than in the north. This is particularly true of recent years, for as the nationalistic movement has increased the Orthodox Albanians have grown to understand that their religion has been exploited by the Greek Church for political purposes. The power of that Church, therefore, is greatly decreasing, and the people are slowly coming to understand that they need not fear the attitude of their Moslem fellow countrymen.

Language and Literature

The Albanians have their own language. It is held by most authorities to be of Aryan origin and probably formed the original speech of the people of large parts, if not the whole, of the Balkan Peninsula. Although the groundwork and grammar of the language are supposed to be Indo-European, a large number of words have been taken from the Turkish, Latin, Greek, Slav, and Italian tongues, which means that there are distinct dialects in different parts of the country. The people of the various regions have borrowed words from the language of the people nearest

FIG. 4.

FIG. 5.

FIG 6.

FIG. 4 Durazzo, taken from back of the town.
FIG. 5—The author's caravan in central Albania, between Tirana and Kroya.
FIG. 6—The author's carriage in central Albania.

FIG. 7—Panorama of the port of Valona on the southern Albanian coast. The town itself lies about a mile and a half from the sea, where the hills of the interior meet the marshy coastal plain.

them. Thus the ignorant Tosk of the south makes use of many more Greek words than a Gheg of the north, whom he would only understand with a certain difficulty. The fact, too, that Albanian was only reduced to writing in comparatively modern times, and that no general form of alphabet was decided upon until after the advent of the Turkish constitution, is largely responsible for the differences of the dialect which exist today.

There is nothing to indicate that prior to the seventeenth century the Albanians could read or write their own language, and the large majority of the people cannot read or write today. The earliest books in Albanian were published about three hundred years ago. These volumes consisted of religious works, dictionaries, and textbooks. Much later the Roman Catholic clergy furthered the language movement by providing the people with books, many of which were published in Skutari by the Jesuits, who began their work in Albania about the middle of the nineteenth century. But it is largely owing to the religious work undertaken by the British and Foreign Bible Society that the people have been provided with literature in Albanian. As early as 1824 the Gospel of St. Matthew was printed in Tosk Albanian at Corfu by the Ionian Bible Society—a society promoted and subsidized by the British and Foreign Bible Society. Three years later the whole of the New Testament was published under the same auspices in the same language. In this publication the modified Greek alphabet, used in the printing, was included in order to enable the illiterate people to read

its contents. Between the years 1860 and 1870 a large portion of the Bible was translated by an Albanian, and a volume containing the four Gospels, the Book of Acts, and an alphabet, in Latin characters with certain minor alterations, was published for the Ghegs in 1866. This publication was followed by others printed in the Greek characters for the people of the south and in the Latin for those of the north and published in Constantinople between the years 1868 and 1879. Ten years later under the direction of Gerasim Kyrias, a patriotic Albanian who had studied in the American School at Samakov, the Book of Genesis and the Gospel of St. Matthew were printed in the new national alphabet (i. e. the Latin alphabet with modifications) adopted by an Albanian committee which met in 1879 to discuss the development of literature. So strong, however, was the Turkish opposition to the introduction of these characters that various publications subsequently made were not allowed to be printed in them. It was only, therefore, after the re-establishment of the constitution in 1908 that the question of the method of writing the language was again taken up seriously and that the new national characters were finally adopted. Their employment was as fervently opposed by the Young Turks as it had been by their predecessors.

Political Conditions

Prior to the advent to power of the Young Turks every endeavor was made to hinder the nationalistic movement. At the same time, during the reign of Abdul Hamid the Albanians were treated with the utmost deference, and His Majesty did everything in his power to make certain of their support in time of need. The Albanian Imperial Guard, recruited from the south, was always well and regularly paid, and these soldiers were allowed to return to their villages as soon as their time had expired, instead of being retained with the colors for months or years beyond their proper period of service. During the days of the old régime, too, the Albanians, especially the tribes of the north, were permitted to manage their own internal affairs, practically without the interference of the Constantinople Government. It was only when the northeastern Ghegs—always actuated by feelings of antagonism towards their Slav brothers—seemed inclined to jeopardize the policy of their spiritual and temporal master at Constantinople, that troops were dispatched to Albania to quiet the country, either by bombarding the malefactors with shell or by bribing their leaders with decorations or with money.

After the re-establishment of the Ottoman constitution, the Young Turks, instead of recognizing that the Albanians could be of valuable support to them, immediately antagonized them by endeavoring to abrogate many of the privileges which they had previously enjoyed. In the north these endeavors took the form of striving to disarm the people, of attempting to do away with the tribal system of government by which the people had formerly been ruled, and of trying to introduce compulsory military ser-

vice. Throughout the country, too, and particularly in the south, another grievance common to the Moslem and Christian Albanians was the attitude of the Sublime Porte towards education. Not only did the Government fail to establish Albanian schools, but it actually opposed the opening and even insisted upon the closing of several schools established by the Albanians themselves. The result of this policy was that from the summer of 1909 right up to the time of the outbreak of the Balkan Wars, large areas of the country were in an almost continuous state of insurrection—a condition which was indirectly if not directly responsible for hastening the downfall of Turkey as a European Power.

An Autonomous State

The Albanians took no active part in the Balkan Wars, because they hated both the Balkan Allies and the Turks with an equal hatred. On the one hand they knew that the Serbians, Montenegrins, Greeks, and to a lesser degree the Bulgarians all coveted areas of territory which were dear to them. On the other hand they recognized that an Ottoman victory would result in further attempts to denationalize and to subjugate them. The consequence was, that as the Turkish rule over Albania existed only in name, practically the whole country was overrun by Serbians, Montenegrins, and Greeks, many of the farms and houses being burned and large portions of the population put to flight. The Balkan Wars were, however, an epoch-making period for the people because during the first campaign and at the end of November, 1912, Ismail Kemal Bey—a former member of the Ottoman Chamber and a leading Albanian—proclaimed an independent government at Valona and, some three weeks later, the London Ambassadorial Conference decided to establish an autonomous Albanian state. That decision, which was followed by prolonged negotiations between the Great Powers as to the status and the frontiers of the new principality, was finally carried out in a manner which made the adopted boundaries of the country a sort of compromise between those suggested by the Balkan Allies, who worked for a very small Albania, and those advocated by Austria and Italy, who, whilst claiming less than did the Albanian Provisional Government, none the less proposed a settlement too much in accordance with the basis of nationality to be acceptable to Serbia, to Montenegro, or to Greece (see map, Fig. 1). In short, whilst the Albanians finally got Skutari in the north and Koritza and Santi Quaranta in the south, they did not secure Ipek, Djakova, Prizrend, and Dibra—places which by their allotment to Montenegro and to Serbia robbed the people of northern Albania of market towns where they had always been wont to trade.

In addition to the fact that it did something to make known to Europe the claims of the Albanians, the Provisional Government of Ismail Kemal Bey, which in a way was the father of the state, together with others afterwards set up in districts not occupied by the Balkan armies or from which

FIG. 8.

FIG. 9.

FIG. 8—Santi Quaranta, a port on the southern Albanian coast opposite the northern end of Corfu.

FIG. 9—Skutari: the Turkish part of the town seen from the Tarabosh road. The Boyana River in the foreground.

they had withdrawn, maintained order and did wonders to preserve peace from the moment of their establishment until long after the arrival of the European Commission of Control (the appointment of which was decided upon by the Ambassadorial Conference) in the early autumn of 1913. Indeed when I was in Albania immediately after this, although I found the international forces in possession of Skutari and three or four entirely independent governments in different parts of the country, such was the state of things that I traveled with perfect safety through the greater part of it without any guard other than a native policeman to enable me to find my way about.

William of Wied

Prince William of Wied, a major in the German Guards, who was nominated by the Great Powers in November, 1913, to rule Albania, arrived at Durazzo, which he constituted his capital, on March 7, 1914. The fact that his régime was a total failure is due in part to the international conditions then prevailing and in part to the rôle he personally played. On the international side trouble arose from the fact that Albania had been constituted largely in order to relieve European tension and some of the ever-recurring difficulties between the Great Powers. Moreover, whilst Europe had nominally fixed the northern and southern frontiers, she took no effective measures to hand over to the prince territory which was his. In the south, the Greeks remained in possession of large areas of Albania until the end of March, 1914. Most, if not all, of these districts were then officially evacuated. But, instead of the Greek regular army, there came the Epirote insurgents and the Epirote independent government, who, secretly supported from Athens, maintained a reign of terror in an area actually alloted to Albania. Thus throughout the stay of the "Mpret," as the Albanians called their ruler, the European concert, if concert it can be called, ignored the necessity for taking the measures essential for the protection of the country and looked on passively whilst the Greeks infringed the frontiers already delimited in the south and whilst the insurgents threatened and practically besieged Durazzo in a manner which finally confined the powers of the prince almost to the very precincts of his palace.

Thus enormous difficulties must have beset any ruler of Albania. His Royal Highness, whose shortcomings were apparent from the first, made little endeavor to overcome them. To say nothing of his attitude towards the southern frontier question, concerning which he should have made some stipulation with the Great Powers before he ever entered upon his new task, the prince made at least two fundamental mistakes. By arriving at Durazzo, instead of entering his new country by way of Skutari, which was still in the hands of the international forces which occupied it in the first Balkan War, and which was therefore more or less neutral country, the new ruler seemed to show his partiality towards Essad Pasha and thus offended

all the enemies of a man, who, if then powerful in the center of the country, was certainly not beloved beyond the confines of his own particular district. Subsequently, instead of trying to take the people into his confidence before it was too late, and of endeavoring to travel among them, the prince appeared to think that he could maintain his authority by encouraging one section of the community to support him against the other and that he could succeed in Albania without any display of courage. Thus on May 24, a few days after the banishment of Essad Pasha, at a time when Durazzo was threatened by the insurgents, the prince and his family took refuge on an Italian warship—an act which was enough to seal his fate in a country where cowardice is not one of the faults of the people. As time wore on things went from bad to worse until the outbreak of the war, immediately before which the international contingent vacated Skutari and immediately after which the prince and the International Commission of Control left Durazzo.

Present Conditions

Before the prince departed on September 11, Turkish insurgents, having occupied Valona, advanced upon Durazzo. From that time onwards, therefore, the country, once more left without even the vestige of a central government, was ruled by various self-constituted administrations, all practically inter-independent. At first Prince Burhan Eddin, son of the ex-Sultan Abdul Hamid, was the nominal chief of an administration which owed any force it possessed to the local power of Essad Pasha. After the subjugation of Serbia and Montenegro, in the winter of 1914-15, when a large number of Serbians retreated to the Adriatic coast through Albania, the northern and central districts of the country were overrun by the Austro-Germans, who finally occupied and still hold about three-quarters of the principality. Aside from the fact that a proclamation was issued by the enemy in 1917, to the effect that he proposes to create of Albania some kind of autonomous province, closely allied to if not constituting an integral part of Austria-Hungary, we therefore have no reliable information concerning the conditions prevailing in an area which is entirely cut off from communication with the Allied world.

Southern Albania

In the south, where the Italians occupied Valona on December 25, 1914, before the entry of that country into the war, events have been bound up with the attitude of the Hellenic Government towards the Epirus question, with the relations existing between Greece and Italy upon that subject, and with the developments in the zone actually held by the forces of King Victor Emanuel. With regard to the first two questions sufficient be it to say that in December, 1916, shortly after the capture of Monastir by the Allies, Colonel Descoin, acting on behalf of the French Government, proclaimed the establishment of a small autonomous Albanian state, to include Koritza

and the area immediately surrounding that town. Farther to the south, where the Greeks had evacuated areas previously held by them, the Italians took over a large section of Epirus and occupied Yanina, actually in Greek territory, during the spring of 1917. After the abdication of King Constantine in June, 1917, and the return to office of M. Venizelos it was, however, arranged at the Paris Conference of the following month that the Italians should withdraw from all but the triangular area of Greek territory through which the road from Santi Quaranta to Koritza runs. This arrangement, together with the fact that M. Venizelos has always endeavored to adopt a moderate attitude upon the Southern Albanian frontier question, have, it must be hoped, created a new atmosphere—an atmosphere in which this highly complicated problem may be able to be solved at the same time in accordance with the principle of nationalities and without serious detriment to the interests of the two countries most closely affected by this ever-vexed question.

Italian Occupation

Whilst prior to her adhesion to the side of the Allies, Italy contented herself by the occupation of the port of Valona, later she extended her front so that it ran along the lower reaches of the Viosa River, which constitutes the natural defensive line for that city. Subsequently, too, she disembarked another force at Santi Quaranta, which, acting with the army already at Valona, advanced into the interior and ultimately established connection near the village of Cologna with the Allied forces based upon Saloniki. Since that time Italy has been in occupation of approximately a quarter of the whole country—a quarter in which she has done a great deal to improve conditions previously prevailing. Considerable lengths of road have been built by the Italians—lengths which have not only facilitated communication but also have provided the native population with work at a fair rate of pay. Agricultural colleges have been established, and the farmers, now able to obtain machinery, are being encouraged to cultivate their ground systematically. Numerous schools have been opened, and the children are thus educated in a manner which has never previously been possible. Last but not least the Italians, realizing that the way to win the people is to leave the direction of local affairs as far as possible in their own hands, have established courts of justice, some of which are presided over by natives brought over from the large Albanian colony in Italy, and have formed a local police corps under the supervision of Italian officers.

The Future

With regard to the future there are two questions of outstanding importance. The first is the problem bound up with the frontiers of the country—a problem complicated in the extreme. It would seem that the Albanians and their friends would do well to work not for the establish-

ment of new but for the rectification of present frontiers. If that policy be adopted, the principal directions in which attention should be turned are towards a change in the south which would bring the whole of the road from Santi Quaranta to Koritza within Albania, instead of leaving it to pass through a triangular area of Greece, as it did prior to the war; towards the inclusion in Albania of Dibra, Prizrend, and Djakova—towns which are absolutely essential as market centers, and towards the regaining of the tribes of Hoti and Gruda, which are so absolutely Albanian in sentiment that they will never peacefully accept any form of alien rule. With such modifications of the decisions arrived at by the London Ambassadorial Conference, Albania would not possess all that she desires but she would at least be constituted on a basis that would make her national existence practicable instead of impossible, as it was during the régime which immediately preceded the war.

Turning to the future status of the principality, on account of the aspirations of her neighbors, of the lack of development of the country, and of the inexperience of the vast majority of the people in all matters pertaining to government, I do not think that, for the present at least, Albania can exist or manage her affairs entirely alone. Consequently, as a return to the state of things existing after the Balkan Wars is impossible, only two alternatives appear to be left. The first is some form of autonomy under all or perhaps a group of the Allied Great Powers—an arrangement carrying with it the difficulties always arising from combined control. The second is her protection by some one of the countries now fighting for the interests of smaller nationalities. If this latter alternative be adopted, as neither the United States nor Great Britain would be likely to wish to undertake the task, it would naturally fall to Italy, who has already proclaimed "the unity and independence of all Albania under the aegis and protection of the Kingdom of Italy" and who has, as I have said, shown her good will towards the Albanians. Such a solution might not at once be acceptable to those of the inhabitants who actually desire to be entirely independent. But patriots as they are, these men will do well to remember that in addition to helping them establish good government and develop their country, the protection of Italy will provide them with a powerful friend—a friend without whom they might be helpless not only to enlarge, but even to maintain, their present frontiers.

AMERICAN EXPLORERS OF AFRICA

By EDWIN SWIFT BALCH

[With separate illustration, Pl. II, facing p. 280.]

Americans are different from Englishmen in regard to their great travelers. The British always make the most of their great travelers. They give them full credit for what they have accomplished, they keep on their charts all English names and all names given by English discoverers, and in so doing sometimes they eliminate the names given by earlier explorers of other nationalities. We Americans, on the contrary, do not stand up enough for our great travelers. For instance, no official protest has been made, as should have been done, in regard to the name of Wilkes Land. Americans are a patriotic people, their conduct in the present world war shows it, but, in regard to geographical discoveries outside of the United States made by Americans, they seem too inert and too indifferent to assert themselves and to back up their own sons.

Among the geographical discoveries by Americans which are too much neglected at home are those made in Africa. And yet in the closing period of the "age of discovery," in which the secrets of the so-called Dark Continent were revealed, three Americans, Paul Belloni Du Chaillu, Charles Chaillé-Long, and Arthur Donaldson Smith, and one Anglo-American, Henry M. Stanley, made certain the existence of a race of African pygmies, put upon the map the greater part of the course of the Congo, and cleared up a large part of the mystery of the source of the Nile. And as it happens that, from accidental circumstances, I was thrown into relation with all four of these distinguished men, some notes of a reminiscent character about the three who have passed away may be of value in the history of geographical discovery.

The Pygmies

That there were pygmy tribes in Africa was asserted by Herodotus, who, of course, is supposed to have drawn on his imagination for his facts. In the beginning of the seventeenth century A. D., Andrew Battel[1] speaks of a West African tribe called Matimbas, whom he does not claim to have seen, and who, he says, are no bigger than boys twelve years old but are very stout. In the nineteenth century several travelers reported seeing individual dwarfs from the far interior. For instance Dr. Krapf,[2] one of the discoverers of Kenia and Kilimanjaro, examined one slave who was only four feet high, besides hearing in Shoa of a tribe of dwarfs living to the south of Abyssinia.

[1] The Strange Adventures of Andrew Battell of Leigh, etc., in "Purchas his Pilgrimes," Glasgow, 1905-07, Vol. 6, p. 401.

[2] J. L. Krapf: Travels, Researches, and Missionary Labours, London, 1860, pp. 51-54.

It was the American, Paul Belloni Du Chaillu, however, who actually determined the existence of a race of pygmies and brought back an account of them from the depths of the gloomy Gabun forest where he, first of all white men, visited one of their settlements. He had been already largely discredited because he was the first to hunt and kill the gorilla.[3] Huxley, for instance, criticized him severely and asserted that though Du Chaillu's statements might be true they were not evidence.[4] How it is that in science true statements are not evidence Huxley does not explain. It is also well to remember that some of Huxley's own very positive opinions, as for instance those about the Neanderthal man,[5] have not stood the test of time. But the discovery of the pygmies by Du Chaillu, coming so soon after his account of the gorilla, did not help to improve his reputation.

The American Chaillé-Long[6] and the Italian Miami first brought back living pygmies from the Niam-Niam country. Later the Anglo-American Henry M. Stanley[7] in the Congo forest, and still later the Philadelphian Arthur Donaldson Smith[8] in eastern Africa, completed the discovery of the belt of pygmy tribes extending across equatorial Africa. It is, therefore, correct to assert that the existence of a race of African dwarfs was revealed to the world mainly by Americans.

Du Chaillu

The venturesome journeys of Du Chaillu made substantial additions not only to zoölogy and to ethnology but also to geography proper. For on those journeys he broke much fresh ground in the unknown hinterland of West Africa, between the equator and the mouth of the Congo. The country formerly called the Gabun and now usually called the French Congo, with its pygmies, its cannibal Fan tribes, and its gorillas, was revealed to the world by Du Chaillu. He explored the Ogowe River and the Rio Fernand Vaz and on his last journey advanced into Ashango Land to Muau Kombo, about 1° 50′ S. and 12° 40′ E., where he found some creeks running eastward.[9]

Du Chaillu I knew only at the end of his life, long after he had ceased his adventurous hunting career. He was of French descent, short of stature, and plain in appearance. He was a very pleasant man, sociable and friendly. He was not in the least embittered, although he had every reason to be; for he told me that years after all his statements had been verified, many people still disbelieved in his discoveries and as a rule looked on him as a sort of Baron Munchausen.

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[3] P. B. Du Chaillu: Explorations and Adventures in Equatorial Africa, London, 1861.
[4] T. H. Huxley: Evidence As to Man's Place in Nature, London, 1863, pp. 53, 54.
[5] Arthur Keith: The Antiquity of Man, London, 1915, pp. 130, 131.
[6] Charles Chaillé-Long: My Life in Four Continents, 2 vols., London, 1912, pp. 126-131.
[7] H. M. Stanley: In Darkest Africa, 2 vols., New York, 1890, *passim*.
[8] A. Donaldson Smith: Through Unknown African Countries, London and New York, 1897, pp. 272-277.
[9] P. B. Du Chaillu: A Journey to Ashango-Land, New York, 1867.

Sources of the Nile

It was that weird character, Richard F. Burton, who first successfully led an expedition from the east into Africa in search of the reported lakes.[10] Lady Burton states that Burton applied for Captain Speke as a companion.[11] Burton certainly deserves more credit than he usually receives, for his discovery of Lake Tanganyika was the start in clearing up the mysteries of the sources of the Nile and the Congo. On the return journey, while Burton was lying ill at Kazeh, or Tabora, Speke made a flying trip northward and reached the southern extremity of a great lake which he believed was the source of the Nile.[12] Burton naturally said that Speke was a humbug. Speke, however, started afterwards on another journey with Colonel J. A. Grant,[13] passed all around the western edge of this lake, which he called Victoria Nyanza, reached a point north of it where a great river was flowing north, and crossed this river again at a point farther west. This river he asserted was the White Nile. On his return he drew, almost entirely from hearsay, a map of the Nile sources[14] which is so nearly correct that it must be looked on, together with Wilkes's chart of the Antarctic Continent,[15] as among the most marvelous achievements of cartography.

Sir Samuel White Baker next added largely to the knowledge of the Nile sources. He discovered Albert Nyanza and coasted along its eastern shore until he reached the mouth of the inflowing Nile, whose exit from Victoria Nyanza had been visited by Speke. But Baker made one remarkable error. As he stood on the heights above Vacovia, at the extreme southeastern end of Albert Nyanza, he persuaded himself that he was looking over a sheet of water stretching south into indefinite distance, and he thus laid down the lake on his map. In fact, while Speke seemed to guess geographical features intuitively right, Baker seemed to guess them intuitively wrong.[16]

Chaillé-Long

Charles Chaillé-Long comes next in time as one of the discoverers of the sources of the Nile. He reached Victoria Nyanza from the north and was the first white man to paddle on its waters. On his return he explored the great river which drains Victoria Nyanza and which is the main upper branch of the White Nile. While paddling down it in canoes, amid hostile tribes and almost superhuman difficulties, he discovered a third unreported great Nilotic lake which, on his return, the Khedive Ismail named Lake Ibrahim.[17]

[10] R. F. Burton: The Lake Regions of Central Africa, 2 vols., London, 1860.
[11] Isabel Burton: The Life of Captain Sir Richd. F. Burton, New York, 1893, p. 257.
[12] J. H. Speke: What Led to the Discovery of the Source of the Nile, Edinburgh and London, 1864.
[13] J. A. Grant: A Walk Across Africa, Edinburgh and London, 1864.
[14] J. H. Speke: Journal of the Discovery of the Source of the Nile, Edinburgh and London, 1863.
[15] Charles Wilkes: Narrative of the United States Exploring Expedition, Philadelphia, 1845.
[16] S. W. Baker: The Albert Nyanza, Great Basin of the Nile, London, 1866; *idem:* Ismailia, New York, 1875.
[17] Charles Chaillé-Long: Central Africa: Naked Truths of Naked People, London, 1876.

In Africa, Chaillé-Long afterwards led an expedition from Lado on the Nile into the Niam-Niam country, where he received the dwarf Ticki-Ticki as a present and where he beheld the Niam-Niams feasting after a battle upon their slain enemies. Chaillé-Long also commanded an expedition which for awhile occupied the land near the mouth of the Juba River. Some years after this, he was the first white man to visit the large island of Quelpaert, off the coast of Korea, and he also stumbled across the statue of Marco Polo in the "Great Flowery Temple of Five-Hundred Genii" in Canton.[18]

FIG. 1—Charles Chaillé-Long, 1842-1917. (Courtesy of Mrs. Chaillé-Long.)

Chaillé-Long was of French descent. He was most lovable, courteous, and charming, a true gentleman of the old school, and as brave a man as ever lived. I met him only during his later years, when I had a great deal of correspondence with him. In one of his letters he wrote most feelingly about Mr. George C. Hurlbut, the former editor of the *Bulletin of the American Geographical Society*, who had just been killed in an automobile accident. He had the highest opinion of Hurlbut, an opinion with which I am in thorough accord, because, with a sense of humor which flashed out now and then in his articles, Hurlbut was a searcher for the truth and was not afraid to espouse an unpopular cause when he thought it a worthy one. Chaillé-Long also thought most highly of Chinese Gordon as a man and as a soldier. But he did not look on him in the least as a saint. In fact the real Gordon was probably a very different character from what he has been represented to be by some of his admirers.

Chaillé-Long deserves a high place among world explorers. As yet he has not received the credit due him, and this is partly because he was an American. His labors cleared up a large part of the Nile mystery and entitle him to rank as one of the four discoverers of the sources of that river. His explorations were made while he was in the service of the Egyptian Government, and it was on this account that, when he discovered a third and a totally unsuspected great Nile lake, the Khedive Ismail named it Lake Ibrahim, after his soldier father, Ibrahim Pasha.[19] But when the British declared a protectorate over Egypt, they were not especially desirous that the Egyptian control of Uganda and other provinces of the White Nile region should be remembered, and possibly for that reason, although they were careful to retain the names Victoria, Albert, and Albert Edward for the other three great Nilotic lakes, they changed the name of Lake Ibrahim to Lake Kioga. It was only by a personal appeal to that great

[18] Chaillé-Long, *op. cit.* in footnote 6, *passim*.

[19] *Ibid.*, p. 103.

man, King Edward VII, that Chaillé-Long was able to have the name Ibrahim placed on British official maps together with the name Kioga.[20]

Stanley

Henry M. Stanley followed Chaillé-Long and completes the quartet of discoverers of the sources of the White Nile. On his second journey he circumnavigated Victoria Nyanza, which he proved to have been laid down by Speke with almost absolute correctness. Thence he followed known trails to Nyangwe, 4° 15′ S. This was the farthest point reached on the Congo by that noble Scotchman David Livingstone, who explored the headwaters of the Congo yet curiously enough never realized that he was on the Congo but died believing that he was among the headwaters of the Nile.[21] From Nyangwe, Stanley pushed down the Congo in canoes and amidst fearful dangers followed the course of the great African river to the Atlantic Ocean.[22] On his last journey Stanley explored the whole of the tributary of the Congo, the Aruwimi River. He then discovered Albert Edward Nyanza, Ruwenzori, or the Mountains of the Moon, and the Semliki River, which drains this vast extent of mountainous country and is the second great headwater of the White Nile.[23]

Fig. 2—Henry M. Stanley in the United States Navy uniform he wore at the capture of Fort Fisher, January 15, 1865.

It was my good fortune, on one occasion, at the very outset of his career, to see a great deal of Henry M. Stanley. I was still a boy, and we were then living in Paris at 48 Avenue Gabriel, on the Champs Elysées. My father made a trip to Egypt at the time of the opening of the Suez Canal and met Stanley at Cairo in February, 1869. In his diary my father records that Stanley had been "sent to Aden en route to Zanzibar to meet Dr. Livingstone, but at Aden met a British ship returning with news that there was no chance of Livingstone coming back that way. Pursuant to

[20] Chaillé-Long, *op. cit.* in footnote 6, pp. 543-569.
[21] Horace Waller: The Last Journals of David Livingstone, New York, 1875, pp. 322, 416, 476, etc.
[22] H. M. Stanley: Through the Dark Continent, 2 vols., New York, 1878.
[23] Stanley, *op. cit.* in footnote 7.

orders he came to Cairo to organize an expedition to meet Livingstone on the Nile, but here met Dr. Kirk's [letter] and now returns to New York via Paris."

My father gave Stanley a letter of introduction to us, and when he came to see us and found I could speak French like a Parisian and was tremendously interested in African exploration he asked me to act as his guide and

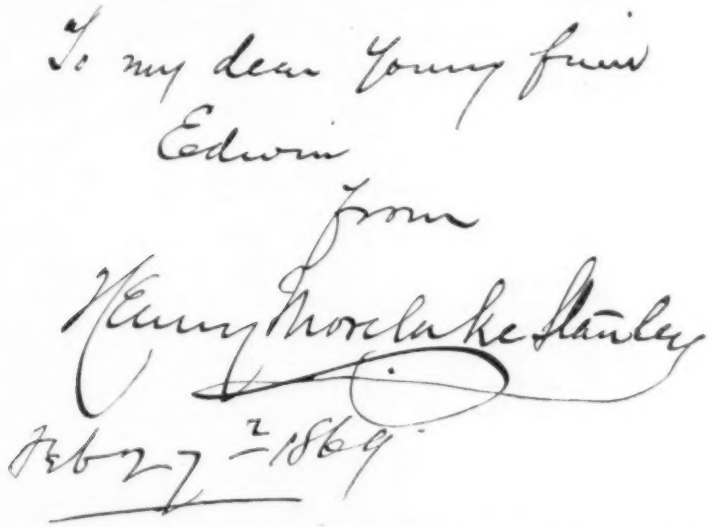


FIG. 3—Autograph in the copy of Livingstone's "Missionary Travels" presented to the author by Stanley.

interpreter during his stay in Paris. I used to walk down every morning to the Hôtel du Louvre, where he was staying, and go with him everywhere—to the Louvre, to Versailles, to Vincennes, to Saint Cloud, and other places. I remember how especially he was interested in "Le Stryge" at Notre Dame. The bill for our excursions was paid by the *New York Herald*.

Stanley was a Welshman by birth, but he was brought up in America, and, at least at the time when I was thrown in contact with him, his characteristics were purely American. He was in no respect English in his ways. A rather short, extremely stocky man, he suggested immense physical strength and was distinctly a man of action rather than a man of thought.

THE SEARCH FOR LIVINGSTONE

Stanley and I became fast friends during the time we were together, and I was so enthusiastic about African exploration that, when he started in the fall of 1869 on his circuitous journey which led him across Persia and finally to Africa in search of Livingstone, he wrote and asked me to accom-

pany him. This invitation my parents declined to let me accept, fortunately for me or I should not now be writing this article. On his departure from Paris, as he thought he should have no further use for them, he gave me the copy of Livingstone's "Missionary Travels"[24] and the copy of Young's "Search after Livingstone"[25] that he had purchased when he started for Zanzibar to interview Livingstone on his expected arrival at the coast. On the back of the map in Young's book he had jotted down at Aden the following questions to put to Livingstone (reproduced in facsimile on Pl. II).

1. How came Moosa to be separated from you?
2. Where did the Johanna men leave you?
3. Did Wakotani leave you as is said?
4. How far up the Rovuma did you go.
5. What point did you touch the Lake Nyassa. 6. What date.
7. How many days did you tarry at the Lake.
8. Did you suffer any inconvenience from the Ma-zitus.
9. Were you kindly treated by the Chipeta people.
10. Also the Babrisa people.
11. Did you have a dog named Chitani with you.

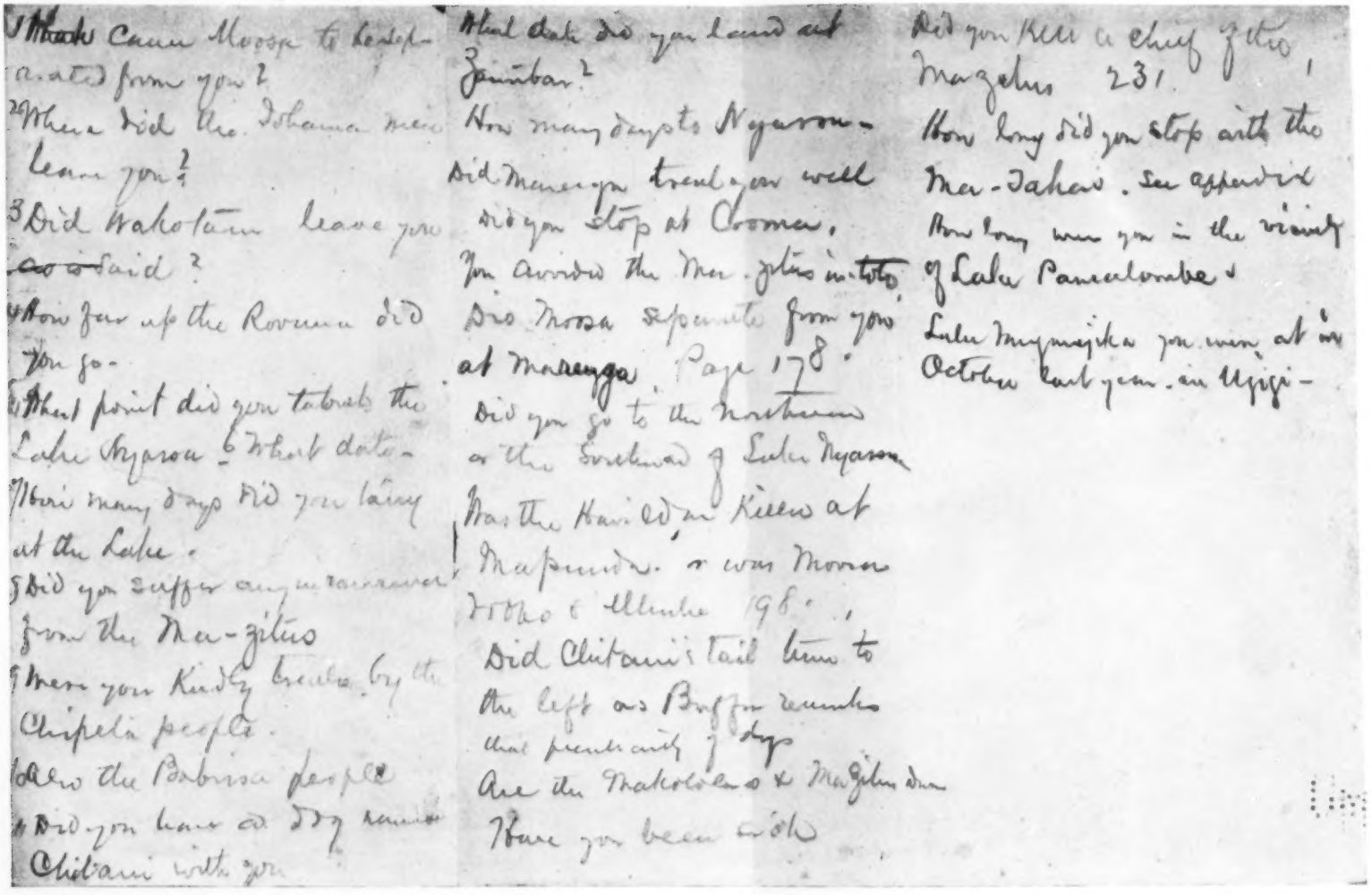
What date did you land at Zanzibar?
How many days to Nyassa.
Did Marenga treat you well.
Did you stop at Corma.
You avoided the Ma-zitus in toto.
Did Moosa separate from you at Marenga. Page 178.
Did you go to the northern or the southern end of Lake Nyassa.
Was the Havildar killed at Mapunda, or was Moosa robbed and ill treated. 198.
Did Chitani's tail turn to the left as Buffon remarks that peculiarity of dogs.
Are the Makololos and Ma-zitus dwarfs(?)
Have you been sick.
Did you kill a chief of the Ma-zitus. 231.
How long did you stop with the Ma-Takas. See Appendix.
How long were you in the vicinity of Lake Pamalombe.
Lake Tanganyika you were at in October last year, in Ujiji.

The present generation, of course, has forgotten the avidity with which news about the sources of the Nile was received half a century ago. To anyone, however, who remembers the excitement caused by Livingstone's reported murder, the questions will recall one of the most thrilling incidents in African exploration. But the autograph has one especial interest: it is absolutely the first thing that Stanley ever did in connection with Livingstone. It is true Stanley had been to Magdala with Napier's military expedition against King Theodoros,[26] but he had no idea of becoming an African explorer when he was first sent to meet Livingstone, in fact he told me that, if he was lucky, he was in hopes of some day exploring Central

[24] David Livingstone: A Popular Account of Missionary Travels and Researches in South Africa, London, 1861.

[25] E. D. Young: The Search after Livingstone, London, 1868.

[26] H. M. Stanley: Coomassie and Magdala, London, 1874.


1 Where Cannot Moosa to be separated from you?
2 Where did the Johanna men leave you?
3 Did Wakolaum leave you or said?
4 How far up the Rovuma did you go.
5 What point did you take to the Lake Nyasa. What date.
6 How many days did you stay at the Lake.
7 Did you suffer any annoyance from the Ma-zitus
8 Were you kindly treated by the Chipeta people.
9 Were the Babissa people
10 Did you have a dog named Chitani with you
What date did you land at Zanzibar?
How many days to Nyassa.
Did Mariano treat you well
Did you stop at Cooma.
You avoided the Ma-zitus in both.
Did Moosa separate from you at Marenga. Page 178.
Did you go to the Northern or the Southward of Lake Nyassa
Was the Hamidan Killed at Mapunda. or was Moosa
Did Chitani's tail turn to the left as Bogue remarks
Are the Makololos & Ma-zitus one
Have you been sick
Did you Kill a chief of the Magalus 231.
How long did you stop with the Ma-Jakas. See appendix
How long were you in the vicinity of Lake Pamalombe.
Lake Mynmiska you were at in October last year. on Upper-

Facsimile of questions prepared by Stanley for his expected interview with Livingstone, written on the back of the map in the copy of Young's "Search after Livingstone" presented to the author by Stanley in 1869.

Asia. These questions therefore were merely jottings for an interview which never took place, but they were the very start of all the work Stanley afterwards did in Africa, in finding Livingstone, in exploring the Nile and the Congo, and in connection with the founding of the Congo Free State.

Stanley told me many things about his early career, some of which are not published in his biography.[27] One of them was his making a voyage as a sailor before the mast to Spain when he was about sixteen years of age. When the crew was not allowed to land at some Spanish port, Stanley quietly jumped overboard and swam ashore. During the Civil War, he said, he acted for a while as reporter for a Northern newspaper. One morning, about five o'clock, he was lying in his tent with another reporter on the outskirts of the camp, when he was aroused by an unusual noise. He looked out and saw a Confederate regiment, which had surprised the pickets, advancing with fixed bayonets in full charge. Stanley bolted and escaped, while his companion was captured. He wrote a few lines in the copy of Livingstone's "Travels" he presented to me, and these I reproduce in facsimile (Fig. 3) because at the time I knew Stanley he called himself "Henry Morelake Stanley," a name he seems later to have changed to "Henry Morton Stanley."

The brilliant record of American enterprise in the exploration of Africa should certainly receive more attention than it does from our historical geographers. They should follow the excellent example of our British cousins of celebrating the fame of their great explorers and should see to it that the names of Du Chaillu, Chaillé-Long, Stanley, and Donaldson Smith are kept alive in our schools and our histories as those of men who have deserved well of America.

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[27] Dorothy Stanley, edit.: The Autobiography of Sir Henry Morton Stanley, Boston and New York, 1909.

THE DEVELOPMENT OF THE PHILIPPINE ISLANDS*

By H. J. WATERS
Kansas State Agricultural College

The Philippine Islands are very far from a satisfactory state of development. The Bureau of Lands estimates that less than one-half of the agricultural lands of the islands are in cultivation. The Philippine Islands have a population of only 8,750,000 and yet import more foodstuffs per capita than does Japan with a population of more than 50,000,000. If the Filipino sugar planters harvested as much sugar to the acre as do the planters of Java, the Philippines, without increasing the area in cane, would be the leading cane sugar producing country of the world, Cuba alone excepted. If the rice growers of the Philippines obtained as high acre yields as do the rice growers of Japan or the United States, instead of buying from India and Japan one-fourth the rice consumed in the islands, the Philippines would be the third largest rice-exporting country in the world. If the acre yield of corn in the Philippines equaled that of the United States or Japan, the Philippine Islands would have grain enough to support a larger pork and poultry industry than has either Canada or Australia.

These are among the possibilities of the Philippines, with less than half the reasonably good agricultural land in cultivation. When all the land is utilized to the limit of its producing power, when the fisheries, manufactures, and commerce of the islands are developed, enough food and wealth will be produced to support 40,000,000 people, a population as large as that of Great Britain. Two types of farming are necessary to the proper development of the Philippines; the small family farm for most of the land and people, and the large, capitalized plantation for the production of sugar. The Government of the islands has not yet fully recognized the difference in the requirements of the type of agriculture which involves large areas, much capital, and ample powers, and that which is best organized as household farms. Immigration to furnish the labor for developing quickly the resources of the islands would have to come from China, Japan, and India, and the capital would have to come largely from the United States.

The Business of the Philippines

Before the war disturbed world business, the value of the purchases of the people of the Philippines amounted to about $2,500,000 more than the

* The author visited the Philippine Islands in the summer of 1914 on request of the insular government to investigate the agricultural conditions and possibilities of the islands. In this article are embodied the main features of geographical interest of his report (The Development of the Philippines: A Summary of the Results of Special Investigation Made by Henry Jackson Waters, President of the Kansas State Agricultural College, by Authority of an Act of the Legislature of the Philippine Islands, 45 pp., Bureau of Printing, Manila, 1915).

value of their sales. A study of the business of the islands reveals many wastes. For example, approximately 9,000,000 pounds of raw sugar are annually sold from the islands at an average price of two cents a pound, all of which, or its equivalent, is brought back again as refined sugar at five cents a pound. What was sold for $180,000 was bought back for $450,000. It cost approximately $70,000 to refine this sugar. The balance of $200,000 was absorbed in transportation charges and profits to people who, for the most part, do not live in the islands.

One may ride for days through grass up to the saddle skirts without seeing a herd of cattle, carabao, or horses. Meanwhile, the people of the Philippines are paying the farmers of Australia and India about $1,750,000 annually for meat and work stock.

With large forest resources, the Philippines buy more than $500,000 worth of lumber a year outside of the islands. Yearly purchases are made outside the islands aggregating $12,500,000, on which the people of the Philippines pay an import duty of some $2,500,000, all of which the islands are capable of producing without beginning to tax the resources of the soil or the people.

The articles sold from the islands are principally raw materials, which support manufacturing industries and give employment to labor in other countries. But by exporting, for example, coconut oil instead of the dried cake a home industry might be developed, a substantial profit would be saved, and the coconut cake would be left at home as an excellent and very much needed food for live stock. The Filipino farmer suffers from limited credit, high interest rates, and the natural and irremediable handicap of floods, droughts, and typhoons. He suffers also from the remediable handicaps of defective land titles and a small family income. He sells the products of his labor at an inopportune season and at a low price and buys his supplies in small quantities at a high price. The Government is remedying the defects in land titles, but progress along this line is slow. The Government has a well-organized and well-managed Central Agricultural Bank, which is very helpful. The family income may best be increased by increasing the area tilled and by creating profitable home industries.

Stressing Important Industries

Agriculturally the Philippines must be essentially a rice, corn, sugar, copra, hemp, tobacco, carabao, cattle, poultry, pig, and pony producing country. Development along these lines is safe and sure, and there is abundant room for improvement in each. Special crops, such as citrous fruits, coffee, cacao, rubber, kapok, silk, and tea may be produced in a few special localities.

A larger and better laying hen, such as has been developed in South China and recently introduced into the Philippines, would be able to turn the balance of trade of the islands from the wrong to the right side of the

ledger. Crossing the Philippine pony with Australian or Arabian stock has produced an animal much better adapted to the needs of the islands than is the present stock. It has been shown by experiment that Galloway and Indian cattle cross well on the native stock, and their offspring make a very satisfactory beef animal. The average yield of rice in the Philippines with unimproved seed is less than twelve bushels an acre. As much as fifty bushels to the acre has been produced by the use of pedigreed seed.

The Live-stock Industry

No one versed in animal husbandry would think of the Philippine Islands as an important live-stock country when compared with such countries as the United States and Argentina. Yet, when compared with other tropical countries or when compared with a semitropical country like Japan, in the number of animals at least, the Philippines make a good showing. For example, there are in the Philippines about seven times as many hogs, four times as many goats, and thirty times as many sheep as there are in Japan. In the number of horses, the Philippines fall far short of Japan, there being only about one-seventh as many, and only about one-sixth as many cattle. The carabao in the Philippines, however, easily offset the difference in the number of horses in the two countries.

The Filipino farmer has not yet learned the very important lesson that the Japanese farmer has only recently learned—the same lesson which the farmers in the United States were a long time in learning—that real progress can come only through better breeding and better care of the animals. Universally the owner of scrub stock gives them scrub care, while the immediate effect of placing improved stock in the hands of the farmer is to increase his interest in them and to increase the intelligence with which they are fed and managed. Much of the present opposition to the enforcement of quarantine regulations in the Philippines will subside when the farmer has improved stock.

There is a large area in Mindanao, the southernmost island of the archipelago, and many smaller areas elsewhere in the Philippines well adapted to the raising of cattle, carabaos, and ponies that are not being utilized. I am certain from personal observation that no public land approximating in value as a cattle range that of Bukidnon Province has been open to the settler in the United States within the last quarter of a century. I was told by those who have had experience with cattle on this range that two and a half acres of land will support a bullock the year through. Pasture land in the United States that will support a bullock half of the year for every two and a half acres has a market value of $25 to $45 an acre, and a rental value of $1.50 to $2.00 an acre a year. In the Philippines grazing land may be leased from the Government on long-time contracts for a few cents an acre.

FIG. 1.

FIG. 2.

FIG. 1—On the way to the vegetable market—an example of the Filipino's waste of time. This family left home in the middle of the afternoon and arrived at the market about ten o'clock the next day, having driven all night. By the time they returned home they had consumed two days and two nights and had marketed 82 cents worth of farm products.

FIG. 2—A Filipino pig market. Pigs in the baskets. The man in the center had carried his two pigs twenty-two miles to market. (All figures, except Fig. 3, from photographs by the author.)

The Sugar Waste

The glaring defect in the sugar industry in the Philippine Islands is in the method of extracting the sugar from the cane, 25 per cent of the sugar being lost in the process of milling. The Bureau of Agriculture of the Philippines has introduced and developed a number of strains of cane that promise to be more productive than those commonly grown, but the stalks are so large that they cannot be successfully milled with the present facilities. Other means of increasing the cane tonnage, such as deeper and more

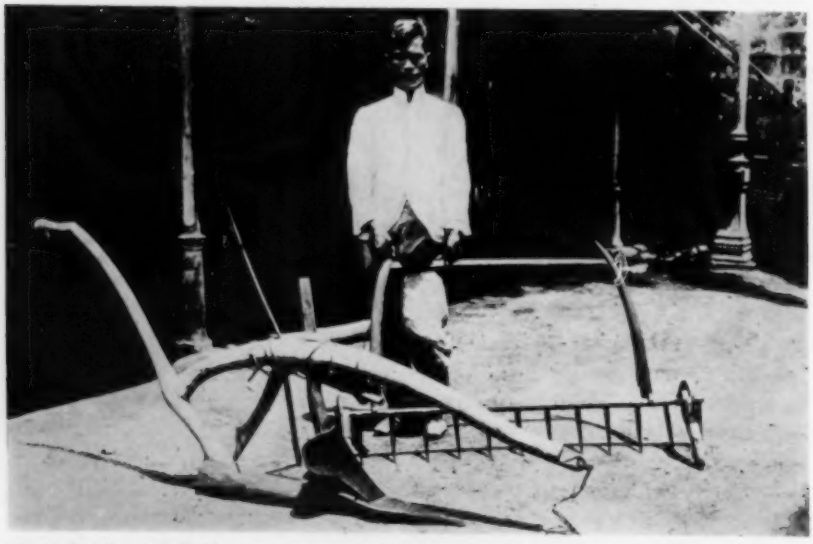

Fig. 3—A native plow and harrow, the complete equipment of machinery for the average Filipino farm.

thorough plowing, crop rotation, the use of fertilizers, and, in some localities, irrigation, are available, but these means are of secondary importance.

Various suggestions have been made for meeting the need of capital among the planters. People competent to speak on this matter assert that outside capital would be available for the erection of all the mills needed in the islands if the Government would declare sugar centrals a public utility and would confer upon their owners the right of eminent domain with respect to the location of the mill, the right of way of its railroad tracks and switches, its pipe lines, sewers, and wharfs, and if the Government would also regulate competition by the same control it exercises over other public utilities, such as railroads, telephones, and banks, with respect to the rates charged, the nature of the contract between the mill owners and the planters, the location and plans for the mill, railways, pipe lines, sewers, and wharves, and make the central subject to governmental control with respect to the efficiency of its management.

Feeding the People

The first duty of the agriculture of a country is to provide a suitable and ample food supply for its people. No race has found rice to be a satisfactory principal diet upon which to rear children or to support labor. Unfortunately, the substitution of corn in whole or in part for rice, which in many sections of the islands could be accomplished with comparative ease, will not remedy the difficulty, because the deficiencies of corn are greater than are those of rice.

Some gain can be made by encouraging people to eat unpolished instead of polished rice. But the desire to eat polished rice, like the desire to eat white bread, reaches very deep into the prejudices of the human race. White bread and polished rice are everywhere the marks of respectability. Black bread and unpolished rice have at all times been the food of the poor. Besides, unpolished rice will furnish only a small part of the additional nutrients needed. Beef, pork, and poultry products will always be so dear that they will be beyond the reach of any except the well-to-do. For the masses, fish, beans, and peas must be relied upon to supply the deficiencies of rice and white bread. Even in the United States, where more meat is produced than in any other country in the world, we are beginning to look to the development of our fisheries and to the production of peas and beans as a means of supplementing wheat and corn as human food.

Germany up to the outbreak of the war was doing much to stimulate the production and use of fish as food. Bounties were paid, tonnage exemptions granted, and low rates of transportation allowed, to encourage the production and shipment of fresh fish. Educational campaigns were conducted by the Government, to show the people how best to cook and serve different kinds of fish, with a view to increasing the consumption of this kind of food. In traveling through Germany, one was constantly impressed with the degree to which the people use beans and peas as a substitute for meat. The ruggedness and efficiency of the German people cannot be questioned.

The Japanese have been obliged to meet the same problem. Along with rice they consume large quantities of barley, beans, and peas, as well as much fish and poultry. With the exception of barley, all these products may be made available in the Philippines. There is no reason why the poultry industry may not be highly developed. Unfortunately, no legume has yet been found that is to the Philippines quite what the soy bean is to Japan, what the white navy bean and the cowpea are to the United States, or what the lupines and lentils are to Germany.

Increasing the Fish Supply

Fish is already an important part of the diet of all classes of Filipinos. It is not certain whether the Philippines have as extensive fishery resources as some other countries, for they have not been developed. As the climate

is hot and cold-storage facilities are not generally available, it is essential that the fishing industry be so developed that it will be subject to as little interruption as possible by storms. This may be accomplished by stocking the fresh waters of the islands and by encouraging fish farming. Japan is an example of the possibility of this sort of farming. In that country in 1903 there were 7,657,000 acres of fresh water devoted to the cultivation of carp, eel, snapping turtle, and the like, producing a yearly income of $683,250. In ten years the annual returns were increased more than threefold, while the area devoted to fish farming had been enlarged only a third.

Deep-sea and shoal fishing should be encouraged. To carry on successful deep-sea fishing, it is necessary to know the exact location and extent of the fishing banks. The determination of the location of the fishing banks is a governmental function.

Relieving Population Pressure

Population is not evenly distributed, and development is by no means uniform. In some regions, as in Cebú and Siquijor, there is considerable crowding, while in others, as in Mindanao, vast stretches of fertile land are yet unoccupied. In Cebú and Siquijor apparently all the land is in cultivation that is capable of yielding a satisfactory harvest. Indeed, I saw many fields of corn or other crops that are too steep and stony to be tilled profitably, or to support the right sort of family life. The farmers try to grow two and frequently three crops of corn on the same land each year, yet the yield of all three crops is pitiably small for one crop. The land was originally fertile, but much of it is so sloping that it has become very badly eroded. The supply of vegetable matter in the soil is practically exhausted, and the soil is left without power to withstand the severe droughts that are common at some seasons of the year.

At first thought, the remedy would seem to be to induce a part of the people now in the overpopulated regions to move to the unoccupied lands. This, however, I learned, is not easy to accomplish with the home-loving Filipino, besides, such a remedy would be only temporary. No country has been helped permanently, much less saved, through the emigration of its best stock. The people who emigrate to a new country are the strongest and best, the weakest being left behind to become the parents of the next generation. Some plan, therefore, must be evolved under which the people may support themselves well where they are.

It is true that if the farm crops were wisely rotated, the fields better tilled, improved seeds planted, and fertilizers applied, the harvest would probably be sufficient to support comfortably all the people now living in these regions, but it is idle to think of a farmer rotating his corn with clover or cowpeas so as to increase the subsequent yield, when the land is needed all the time to grow corn with which to support his family. It is equally futile to advise the use of fertilizers when capital is not available. Im-

provement in farming will come slowly, scarcely more rapidly than the increased food, which the improvement brings, will be needed by the natural increase in population and by higher standards of living.

Moreover, there is a very definite limit to the degree to which a country can be developed by means of agriculture alone. When this limit is reached, as it seems to have been in these cases, further progress will come only from putting the people to work in other directions. Germany long ago reached the limit of her growth under agriculture alone, and developed manufactures. Japan's recent remarkable development has been through industry rather than agriculture. The United States, until recently the largest food-exporting nation in the world, is beginning to look to other countries for a part of her food and henceforth must rely more upon her manufacturing industries. The Filipinos would be following the teachings of the best experience of other peoples by setting to work to develop manufactures. During my visit to some of the overcrowded islands, I saw ships bringing away hogs, corn, and other food products which were needed as food for the people at home. Every effort should be made to change the exports of these islands from food products to manufactured articles. At first, and perhaps permanently, the manufacturing must be done in the household. Schools in the congested centers can be converted into practical trade schools. There will then be money available with which to support the family, while legumes are grown on the land for green manure and with which to buy fertilizers and other equipment. The combined income of an improved agriculture and a well-organized household industry would set the people well on their way toward a condition of prosperity and commercial independence.

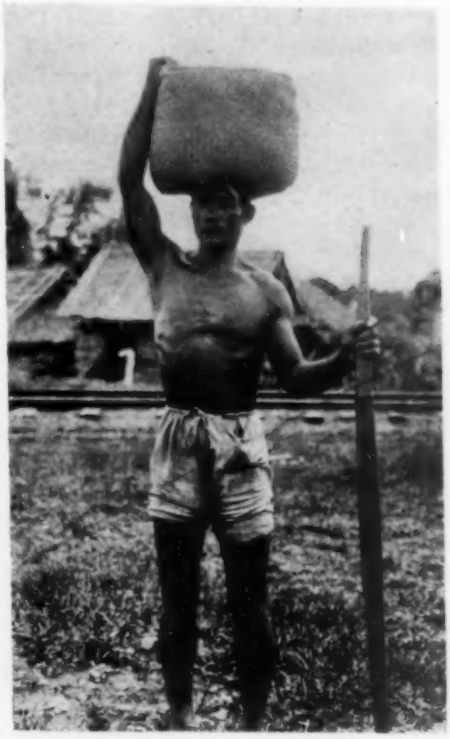

FIG. 4—A native Filipino farmer on the way to market his corn.

Setting the People to Work

Setting the people at the tasks that they can best perform is the highest duty of the schools. There is at present a stupendous waste of labor and time. I saw bands of able-bodied men and women passing through the rice fields reaping the grain with an instrument less efficient than a jackknife. In other fields I saw farmers cutting rice with a hand sickle such as was used in Biblical days. Even the use of this ancient method economized the time of the harvesters tenfold over that most generally employed. It would seem to be easy to persuade farmers to make a change that would so reduce the cost of harvesting. Yet the necessity for economizing labor or time does not appeal strongly to those who have little else to do. With any people the change to more economical methods is made easier if more profitable tasks are at the same time provided.

Household Industries

Filipino women are skillful, industrious, and eager to learn, and a good beginning in household arts has already been made. At the outbreak of the war nearly $500,000 worth of hats and some $200,000 worth of embroidery were exported from the Philippines. Philippine-manufactured articles are admitted into the United States duty free, while the articles manufactured in other countries with which the Filipinos would compete are taxed by the United States.

Hats are now one of the most important household products. Only three kinds are exported. Many of the remaining twenty varieties produced in the provinces are also capable of commercial development, yet a large number of American-made hats are worn. All the hats worn in the islands should be produced there, and the export hat trade might be greatly increased.

Embroidery is an infant industry. Exporters say that the supply has not met more than a fraction of the demand. The industry is now confined to a few towns near Manila and is capable of being greatly extended.

The Philippines produce a great variety of textiles on foot looms, but entirely for domestic consumption. If the efforts of weavers are turned to the production of artistic articles and cloth suitable for use in the United States, the industry can be made much more remunerative than it now is. To this end the Bureau of Education is introducing labor-saving mechanical devices

Baskets are a relatively new product, having been developed for export entirely in the schools. The great quantity of materials available, together with the efforts of the schools, should result in a larger basket industry even than Japan's.

The work of the schools in standardizing the handicraft products and in creating new household industries is certain to produce immediate results

if a satisfactory system of selling is worked out. To find or create a market for such industries is a proper function of government.

The Schools as the Foundation of the Future

Most of the progress in all directions, and particularly in agriculture and industry, will be dependent upon the school system and general education. In fact, even now one cannot help being impressed with the practical nature

Fig. 5—Formerly the castle of a Moro chief, now an American school house.

of the instruction offered in the schools and its adaptation to the needs of the people. Provision is made for the training of teachers in vocational subjects in the College of Agriculture, in the Normal School, in the Vacation Assembly, and through the supervision of teaching by the officers of the Bureau of Education.

Several types of schools especially designed to train farmers have been developed. These schools grade from the provincial secondary or intermediate school, with dormitory accommodations for the students and farms of more than a thousand acres in area, to the farm settlement primary schools in which half the time of the pupil is spent in practical field work. Instruction in vegetable gardening is a requirement of all the schools of the islands with the exception of those which give other trade or industrial courses. Nursery work is a feature of all intermediate school gardens. Every year almost 50,000 ornamental trees and shrubs and more than this number of fruit trees are propagated by the pupils and distributed among the farmers. There are 3,100 school gardens in the islands, and 39,900

home gardens conducted by school pupils under direct supervision. There are 6,000 boys and 1,800 girls receiving instruction in gardening.

Work in domestic science and household arts is also well developed in general. In the congested regions, instruction in household industries should receive the same emphasis that agricultural instruction has received in some of the partly developed agricultural regions of the Philippines. A provincial trade school devoted exclusively to the development of handicraft manufacture should be established in the city of Cebú.

The Solidarity of the People

It is unfortunate for any country to be divided by mountains, seas, swamps, lakes, rivers, or other obstacles to the free intermingling, intertrading, and intermarrying of its people. A people divided into small groups, with different traditions and unequal opportunities, develop unevenly. Japan, with a backbone of mountains, has maintained the solidarity of her people by a uniform language, a strong government, and in recent years a well-organized system of public schools and a well laid out system of highways and railways. China, neglecting those agencies which facilitate the intermingling and intermarrying of the people, has not yet developed beyond the tribal state. The Philippines, with their thirty or more separate islands, with the many different dialects and languages, with poor means of transportation, have not yet advanced far toward solidarity, although considerable progress has been made in recent years.

Along with efforts to provide a better diet and to promote solidarity of the people should go efforts to prepare them for better ways of living. Race pride should be quickened; proper forms of recreation should be provided; and institutions like the University of the Philippines, the Bureaus of Education, Health, Agriculture, and Science should be highly developed. These institutions should be made capable of carrying not only the work of the Philippines, but also a part of the work of the world. It may be said that the Filipinos are already weighed down with public burdens, but in sacrifices for the common good a people always finds its principal source of strength.

THE PAMPA OF ARGENTINA

By WALTER S. TOWER
University of Chicago

Few regions in the world affect the observer as does the Pampa of Argentina. Only by crossing and recrossing it can one appreciate fully its apparently infinite distances and get that impression of vastness which comes in mid-ocean and in great deserts where one gazes interminably at the horizon. One must see it to realize the almost boundless expanse of grass-covered plain, originally with hardly a tree or a bush to vary the scene over the endless miles which stretch away to an unbroken horizon. Here, valleys and rocks and sparkling streams are meaningless names, and all the world, so far as one knows, is a monotone of green.

Where man has planted them, trees grow well and, like the bulky eucalyptus, stand up boldly against the sky, quite out of harmony with the dominant flatness, with an effect much like that obtained by grafting a Gothic spire on one of the horizontal, patio houses of a Pampa *estancia*. Ranch houses, too, may notch the skyline, but always in a way which brings into relief their insignificance and their isolation. Lone windmills, like giant skeletons in full stride, suggest a touch of the unreal. Here and there an expanse of water appears, half concealed in its swale, behind rank borders of rush and sedge, shallow and uninviting, but flaming with the gay plumage of water fowl. In the distance are cattle or sheep or a patch of yellow where a ripening grainfield tells of man's effort to conquer these vast spaces for his own enrichment.

Extent

The common use of the word *pampa* makes it almost synonymous with "plain." In Argentina, however, *La Pampa* is a name applied to only a part of the plains (*pampas*) which are so extensive in that country. As the Argentino thinks of it, the Pampa is an area of about 250,000 square miles, lying mainly between 30° and 40° S., and extending from the Atlantic coast westward for a maximum distance of about 400 miles. The eastern limit follows the coast and the Rio Paraná, while the landward limit, marked by the transition from grass to bush or forest, is a curved line running from the coast south of Bahia Blanca northwestward into the province of San Luis and thence northeastward to the Rio Paraná above the city of Santa Fé (Fig. 2). Within these limits are included all of the province of Buenos Aires and parts of the provinces of Santa Fé, Córdoba, San Luis, and Pampa Central. By some the southern part of Entre Rios province would be included, but that is a somewhat different type of region.

FIG. 1—General view of the Pampa near the Rio Paraná.

Important Aspects

Drainage

The general idea of the Pampa as a great grassy tract, low, flat, and fertile, carries only an inadequate concept of what the region really is. Other aspects such as location, drainage, climate, and the landscape of the region are no less important. Any map of the region (Fig. 2) will show how open

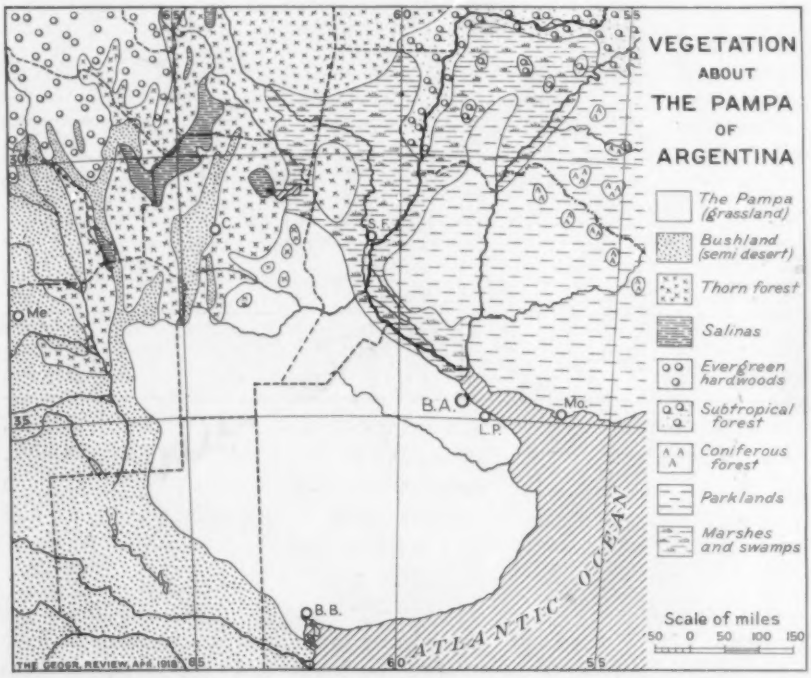

FIG. 2—Sketch map of the vegetation about the Pampa of Argentina. Scale, 1:15,000,000. Modified from vegetation maps of South America by M. E. Hardy (Oxford Wall Maps) and J. F. Unstead and E. G. R. Taylor (Philips' Comparative Series of Wall Atlases). Abbreviations: B. A., Buenos Aires; L. P., La Plata; S. F., Santa Fé; C., Córdoba; Me., Mendoza; B. B., Bahia Blanca.

its eastern margin is to approach from the ocean and by the deep lower course of the Paraná, giving the Pampa an unsurpassed location with reference to great natural highways.

On the other hand the Pampa is so low, so flat, and so young that no large rivers and few small ones flow through it to extend the natural routes of transportation toward the interior. Thus in the course of about 400 miles the Paraná receives only two sizable tributaries, the Rio Carcaraña and the Rio Salado, neither of them readily navigable; while only a few small, non-navigable streams (like the Salado of Buenos Aires province) enter the ocean and the estuary. As a result of the small number and diminutive size of the streams, seasonal or permanent wet lands are found

in most sections, especially toward the coast, where they have retarded farming (Fig. 6), and the importance of underground water supplies to man and animals is greater than in many other plains.

Climate

A good climate is another important aspect of the Pampa. The maxima in mid-summer may run high, but the normal temperatures for the warm season are not extreme (Table I). On the other hand, in winter, there are

Table I—Temperature Data for Typical Pampa Stations

Mean Monthly (in degrees Centigrade)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Ceres (north)	25.5	24.8	22.0	18.8	15.8	13.1	12.9	12.9	17.2	19.2	21.7	24.4
Bahia Blanca (south)	21.5	21.0	18.9	15.2	11.2	7.7	7.5	8.5	11.4	13.9	17.4	19.7
Buenos Aires (east)	23.1	22.8	20.9	16.6	13.3	10.6	10.1	11.3	13.4	16.1	19.6	21.9
Victorica (west)	23.9	21.9	18.5	14.7	10.5	7.5	7.2	7.6	11.6	14.5	18.8	21.9

	Mean Minima					*Absolute Minima*
	May	June	July	Aug.	Sept.	
Ceres	10.1	7.4	6.4	5.7	9.2	−7.
Bahia Blanca	7.1	4.5	3.7	3.8	6.3	−5.2
Buenos Aires	8.2	5.7	5.8	5.9	7.7	−5.
Victorica	4.5	0.5	0.5	1.3	4.3	−11.

few places that can ever properly be described as cold (minima, Table I). Snow is uncommon over most of the Pampa and is unknown in much of it. Palms grow very well in the open squares of Buenos Aires (34° S.), common vegetables may be seen growing thereabouts every month in the year, and plowing and seeding may be done in midwinter.

Rainfall

The rainfall of the Pampa is moderate to light, decreasing enough from coast to interior (Fig. 3) to make the western margin semi-arid, for there the amount (less than 16 inches) will support only drought-resisting plants. It must be remembered, however, that while the rate of evaporation is typically high, most of the rain comes during the warmer six months, the removal of rain by surface run-off is unusually low, and the water table is within a few feet of the surface. Thus the availability of water for plants probably is greater than in many other areas receiving like amounts of rain. As in all such regions there are sharp oscillations of rainfall, above and below the normal (Fig. 4), with consequent periods of abundance, separated by years of drought and crop shortage. One of these fluctuations and its effects on a staple crop are shown in Table II. The seasonal distribution of rainfall ordinarily insures an almost ideal harvest time, but now and then persistent heavy rains may cause much damage to ripening crops. Thus a striking combination of favorable aspects makes the Pampa stand out conspicuously among the famous plains of the several continents.

TABLE II—VARIATION IN RAINFALL, CORN CROP, AND EXPORT

YEAR	RAINFALL OF GROWING SEASON	AREA SOWN	PRODUCTION	EXPORT
1905-06	462 mm.	2,717,300 hectares	4,951,000 tons	2,693,000 tons
1906-07	268 mm.	2,851,300 hectares	1,823,000 tons	1,276,000 tons

Handicaps to Progress

EARLY SETTLEMENTS

With almost ideal conditions for colonization afforded by easy access from the Atlantic to vast grassy plains with a desirable climate, this Argentine Pampa should have become an important center for European population early in the development of South America. As a matter of fact, soon after the discovery of the continent, glowing accounts of the region, brought back by such explorers as De Solis and Cabot, led the Spanish to make plans for the occupation of the lands about the Rio de la Plata. The first attempt to establish a colony at the site of Buenos Aires (about 1536) failed, as did a second venture at the same place six or seven years later, presumably because the sites along the estuary, unprotected by any barrier, were untenable by a small colony in the face of hostility from the Indians.

After the failure of the early ventures at Buenos Aires, thirty years elapsed before the founding of Santa Fé (1573) by settlers from Asunción. This marked the beginning of permanent European occupation of the region. Whether Santa Fé succeeded because the site near the mouth of the Salado was better protected than those on

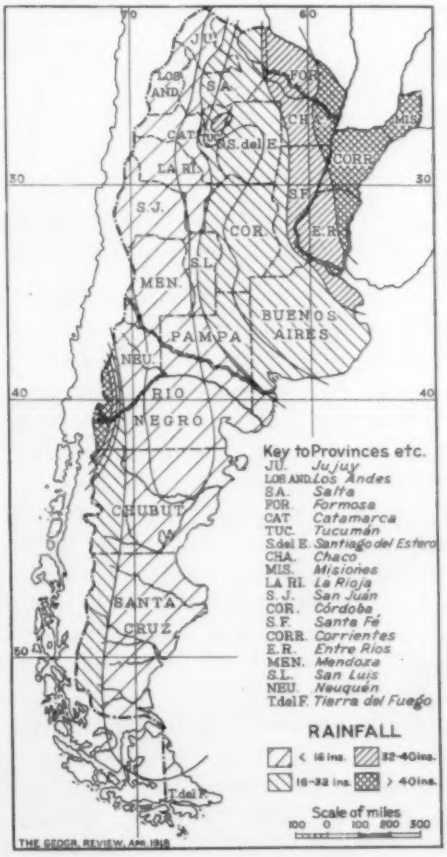

FIG. 3—Sketch map of the rainfall of Argentina. Scale, 1:32,000,000. Based on Pl. 17 of Walter G. Davis' "Climate of the Argentine Republic" (In Vol. 3 of the "Agricultural and Pastoral Census of the Argentine Republic in 1908," Ministry of Agriculture, Buenos Aires, 1909).

the estuary, or Indian opposition was less in the north, or the Spanish power was stronger, cannot be determined, but the Santa Fé settlers soon found that their main support lay in hunting the wild cattle and horses, which had multiplied to great numbers from the animals left by the earlier colonists.

The river route naturally favored the extension of settlement southward from Santa Fé. With the need for a town on the estuary a third attempt at Buenos Aires (1580) proved successful, the same site having been chosen each time because it was about the only place where the shore was not marshy and where the mouth of a small stream provided some shelter for

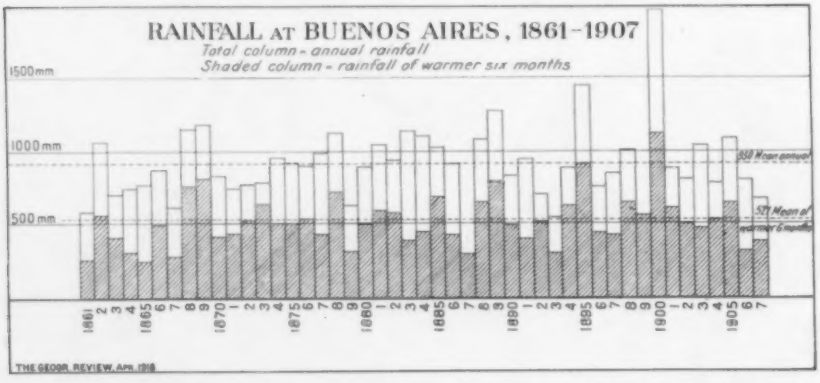

FIG. 4.—Graph of rainfall at Buenos Aires, 1861-1907. Based in part on Pl. 26 of W. G. Davis' "Climate of the Argentine Republic."

boats. Thus there began, in the last quarter of the sixteenth century, the Spanish occupation of one of the best parts of their vast colonial empire. Most of the time which has elapsed since then, however, has been marked by comparatively little change from the conditions surrounding those earliest settlements. Population increased and spread slowly from the river towns toward the interior, but dependence on animal products continued to be almost the sole basis of support.

TRADE LIMITATIONS

For nearly three centuries after the founding of Buenos Aires, there was not much chance for the Pampa to develop trade in crop products. Whatever the condition of Spanish administration and the inclination of the colonists might have been, they could not have changed the fact that world trade in agricultural products was comparatively small in those times, was mainly not in the kinds of products for which the Pampa was best suited, and, so far as needed, such crop products as the Pampa could furnish were readily supplied from places closer to the markets. However, the lack of staples of trade must not be emphasized too strongly in account-

ing for the backwardness of the region, because the pastoral products were from the beginning, and increasingly as time went on, in demand in European markets, if not elsewhere; and few places were then, any more than they are now, more favored by nature than was the Pampa for production of and trade in such goods.

Contraband Trade

Thus, although the first settlers found a convenient basis of existence in hunting the animals which then roamed the grasslands, few of the products could be handled profitably over the prescribed route via the Isthmus of Panama to Spain. A less restricted trade was necessary if the settlements were to live; hence comparatively early a contraband trade was carried on through the convenient river ports or Buenos Aires, by which means the people of the Pampa disposed of their surplus (hides and skins mainly) and secured at not too exorbitant prices those European goods which they needed. Only through contraband trade could the region progress even as slowly as is known to have been the case; but illicit intercourse developed many undesirable conditions, from which the region recovered slowly, and it stimulated no such growth as would have come from freedom of trade through the Pampa ports.

Removal of Restrictions

The far-reaching effects of the various handicaps, mainly political, appear in many aspects of colonial development. Thus the early importance of the interior sections of Argentina, such as arid Mendoza (then the Cuyo province of Chile) and Tucumán, appears to have been fully as great as that in the much more favored Pampa section. Later the progress in the Pampa was much more rapid, when some of the restrictive regulations were removed (1774-1778) and trade was permitted direct from Buenos Aires to the home country, as well as to the other colonies and foreign countries. The trade and the population of Buenos Aires are said to have shown in twenty years a development much greater than had been wrought in the preceding two hundred years. It is true, of course, that the conditions of world trade had changed during the long period of restricted intercourse; but it is undeniable that the removal of restrictions permitted for the first time the trend of events to be directed by the natural advantages of the region.

Political Troubles

Unfortunately, however, the influences of natural advantages were unhampered for only a few years, when they again were thrust into the background by the conditions incident to the War for Independence and the subsequent interval of domestic trouble. During the first half of the nineteenth century the course of events, again largely political, kept nearly stationary all aspects of material development. This stagnation is indicated

by the growth of population from an estimated number of 800,000 or 900,000 (about 1800) for the whole republic to not more than 1,250,000 some sixty years later, a rate of increase slower than what natural increase normally would provide. Buenos Aires, too, stood nearly still in spite of the new opportunity to serve as the commercial center for a wide area surrounding the Pampa, from Mendoza to Paraguay; for, whereas the city is credited with an increase of more than 30,000 population in the last two decades of the eighteenth century, its increase in the first three decades of the nineteenth century is estimated at little more than 10,000. In fact, as recently as 1870 the conditions in the Argentine Pampa were but very little different from those surrounding the simple pastoral communities which had been started three hundred years before. It is true there were more people. A new type, the *gaucho*, with a picturesque dress to suit his life in the saddle, had been produced. There were more animals; sheep were raised along with the cattle, and animals were now private property instead of wild herds. Cities had been founded and had grown, both along the river and farther inland. Trade had increased in variety and in volume. But the development was largely a difference of degree rather than kind and nowhere approached what the natural advantages of the region would permit.

Influences in Recent Development

The modern aspects of Pampa development began (about 1870) with the appearance of new forces which released the region from its long period of stagnation. Prominent among those forces were the final settlement of domestic political problems, the improvement of transportation, both internal and external, the beginning of new and much larger immigration (especially Italian), fencing of the grazing lands, increased planting of forage crops (especially alfalfa) for fattening cattle, and the expansion of world markets for agricultural and pastoral products. All natural advantages now were free to operate, so that the tendencies since that time have revealed the true character of the region.

Poor Transportation

Lack of efficient means of transportation always had been one of the great handicaps for the places more than a score or so miles away from the ports. The closure of the Paraná to foreign craft (prior to 1854) had lessened the influence of that highway. Absence of navigable streams intersecting the Pampa made land haul the only means of transport until railroads appeared (after 1857). Land travel was difficult, especially in wet weather, because imperfect drainage, deep, fine soil, and lack of road building material made it impossible to develop a system of good wagon roads. Thus poor transportation had helped to keep the whole region dependent on pastoral activities.

Railroads

The advent of railroads, therefore, here even more than in the prairies of the United States, opened new prospects for a vast fertile region. From the beginning, Buenos Aires was the chief center from which railroads radiated to the west, northwest, and south; so that to the advantages which the city enjoyed naturally, because of its relationship to the river routes and the head of the estuary, there were added the benefits of an ever lengthening mileage of railroads through the Pampa. Flatness of surface, absence of valleys or streams to be crossed, mildness of climate, all contributed to ease and economy of construction and operation of railroads. But on the other hand there were some serious disadvantages arising from the necessity of importing nearly all the materials for construction (except ties) and the rolling stock, and from complete dependence on foreign supplies of fuel. Despite these drawbacks, however, lines soon tapped nearly all parts of the Pampa and now make a complete network, with the principal center at Buenos Aires (Fig. 6), and others at Rosario, Bahia Blanca, and Santa Fé, thus providing each part of the region with its own convenient outlet for ocean shipment. Of the total mileage of railroads in the republic in 1914, approximately 65 per cent (14,000 miles) is in the Pampa, making it the only part of the country, and one of the few sections of the continent, that has any approach toward adequate transportation facilities. Shortness of rail haul to and from the ports, hardly more than 200 miles for any large area, is now one of the conspicuous advantages of the Pampa.

Immigration

Railroad building and increase of immigration went hand in hand, and for the first time the growth of population was conspicuous. Attractive as it is, the Pampa had acquired only a small population in nearly three centuries of Spanish occupation. During the colonial period emigration to La Plata settlements seems never to have been encouraged by the Spanish authorities; other nationalities were excluded, and as a result the growth of the European element was very slow. There was no reason among these pastoral people for any large number of negro slaves, and the native Indians of the region were less inclined than tribes elsewhere to racial admixture with the conquerors. As a result, fortunately for the future republic, Argentina entered its period of independence with a very sparse population, not exceeding 900,000, probably not more than half of which was in the Pampa. Buenos Aires was the only important Pampa center, with not more than 30,000 people. During the first decades of independence, also, population grew hardly more than the natural increase would provide, and immigration was so small as to be negligible. Domestic conditions in Argentina and the superior attractions of other places, especially the United States, may be held mainly responsible for this almost complete lack of immigration into the republic until after 1850. About that time,

however, a steady influx began. Conditions in some of the European countries, especially Italy, were such as greatly to increase emigration. The opportunities in the Pampa became more and more attractive to Europeans, especially those of Mediterranean lands; and so, within two decades, tens and then scores of thousands of immigrants were being welcomed annually, nearly all of them settling in the Pampa or its commercial centers.

Farming

This rapidly increasing population offered a larger supply to labor than the pastoral activities required or could absorb. The development of farming followed then as a natural result of improved transportation and greater population. Farming also was stimulated by changes outside of Argentina, which increased the markets for the kinds of crops which the Pampa would produce most readily, that is, the cereal crops of middle latitudes. The progress of manufacturing and accompanying aspects of development (after the middle of the nineteenth century) forced western European countries to become habitual importers of foodstuffs, a tendency which became marked during the years when the Pampa was being opened to farming. There also was in neighboring sections of South America, especially in Brazil, opportunity for disposing of increasing amounts of flour, grain, and meat. Expansion of leather-working and woolen industries led to more demand and better prices for the old staples of trade, while the introduction of refrigeration changed the whole future of meat production, by making possible the shipment of fresh (frozen or chilled) meat across the tropics to northern markets. Sheep carcasses heretofore largely rendered into tallow (if used at all) now became salable as frozen mutton, and cattle previously shipped alive (with large losses) or in the cheap form of dried and salted beef (*tasajo*), now could be slaughtered locally and the meat sold at rising prices in more exacting markets.

The Progress of Grazing and Farming

The effect of all the new forces, appearing within a space of twenty years, was, first, to open a new era for the old pastoral activities of the Pampa, as indicated by the increase in the number of cattle and sheep in the republic (Table III), most of this increase being in the Pampa (Figs. 13 and 14);

Table III—Increase in Number of Cattle and Sheep in Argentina

Year	Number of Cattle	Number of Sheep	Year	Number of Cattle	Number of Sheep
1864*.....	10,215,000	23,000,000	1895.....	21,700,000	74,379,000
1870*.....	(?)	41,000,000	1908.....	29,116,000	67,211,000
1880*.....	14,171,000 (1884)	61,000,000	1912*.....	29,016,000	80,401,000
1888.....	21,961,000	66,701,000	1916.....	30,796,000	81,185,000

* Estimated.

and, second, and more important, to start the period of cereal farming, which typifies the present.

Increase of Cultivated Area

In spite of excellent opportunities for raising a variety of crops, the Pampa communities had been for many years importing common food-

Table IV—Increase in Argentine Population and Area Tilled

Year	Acreage of Crops	Whereof in Pampa Provinces	Population	Whereof in Pampa Provinces
1800	(?) acres		800,000 (?)	
1857	506,000 (1864)		1,160,000	
1872	1,450,000	57%	2,231,000	51%
1888	7,430,000		3,158,000	
1895	12,000,000	77	3,954,000	61
1910	46,700,000	89	7,171,900	69
1915	60,000,000 (approx.)		7,950,000 (approx.)	

stuffs. Wheat and wheat flour, for instance, were sent regularly from southern Brazil to the Buenos Aires market as late as 1870. Not as much as one acre per capita was then under cultivation in the republic (Table IV), and of the Pampa only the northernmost parts had been touched, mainly to raise corn. When the change came, however, the acreage cultivated increased with amazing rapidity (Table IV), for in the first twenty years of expansion the area of crop lands increased more than fourfold, and in the next twenty years the increase was more than fourfold again. In forty years the area tilled has risen from less than one acre to nearly eight acres per capita. This present figure is extraordinary, because it is exceeded in no other country in the world and was reached during a period of rapid growth of population. Concentration of farming in the Pampa, and the failure of its progress to be reflected by adjacent areas, is shown by the distribution of cultivated land (Fig. 5) and the percentages of Table IV.

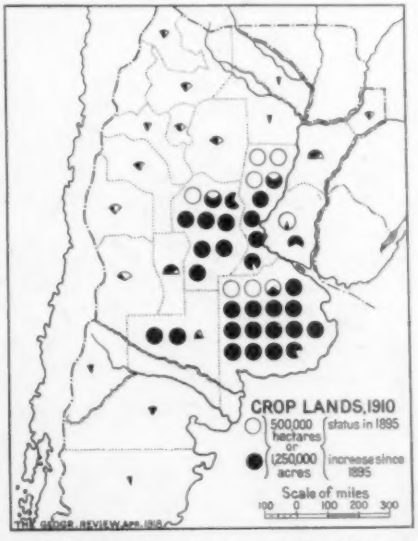

Fig. 5—Cartogram showing the distribution of crop lands in Argentina in 1910 and their increase since 1895. Scale, 136,000,000. For province names see Fig. 3. Figs. 5-8 and 13-16 are based on the "Agricultural and Pastoral Census of 1908" and the annual "Agricultural Statistics" published by the Argentine Ministry of Agriculture.

Character of Crops

Most of the development has been of the simple sort, typical of humid grassy plains in the early stages of tillage. Cultivation of large tracts by machine methods, greatly favored by the nature of the region, small average

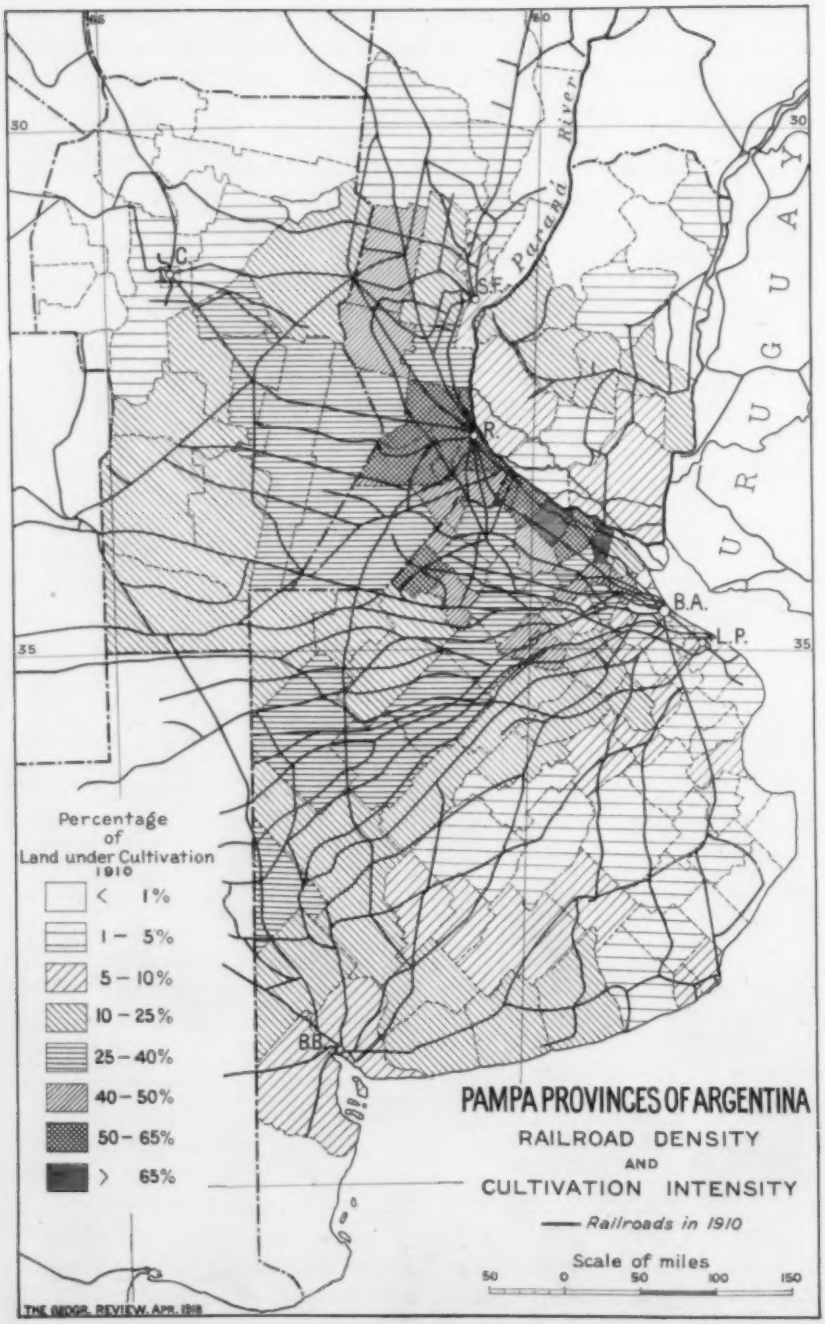

Fig. 6—Sketch map showing the railroad density and the cultivation intensity of the Pampa provinces of Argentina. Scale, 1:7,250,000. Abbreviations as in Fig. 1. R.=Rosario.

yields, and dependence on a few easily marketed crops are characteristic of all parts. Wheat, corn, oats, flax, and alfalfa almost monopolize the crop land of the Pampa (Fig. 7), the distribution and extent of the several crops being shown by Figure 8, which shows also the small share of these crops belonging to the rest of the republic. Cereals, however, are not the only crops for which the Pampa is adapted, for its location gives it the climatic conditions under which subtropical and middle-latitude products meet. With labor available, the northern edge might raise much cotton, being similar to the Texas cotton belt (Table V); tobacco can be raised widely;

TABLE V—CLIMATIC DATA FOR CERES (NORTHERN MARGIN OF THE PAMPA) AND WACO (TEXAS COTTON BELT)

Temperatures—Mean Monthly (in degrees Fahrenheit)

	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APRIL	MAY
Ceres	56	55	55	63	66	71	76	78	77	72	66	60
	DEC.	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.
Waco	52	48	51	58	67	75	82	85	85	78	67	57

Rainfall—Mean Monthly (in inches)

	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APRIL	MAY
Ceres	0.4	0.5	0.8	1.1	2.5	3.5	4.2	4.5	4.6	4.5	3.2	1.1
	DEC.	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.
Waco	2.7	1.9	2.9	2.4	3.9	4.3	4.5	3.2	2.1	2.2	3.1	2.2

and all the common field crops, vegetables, and nontropical fruits will find satisfactory conditions. So far, however, most of these possibilities have little or no place in the region, and it seems somewhat paradoxical for the Pampa to be sending great amounts of breadstuffs to Europe, while it buys potatoes from France, eggs from Italy, and canned foods of all sorts, at high prices. The chief reason for this condition probably is that development has not yet reached the stage which would make diversified crops logical parts of the average farm activity. But as agricultural evolution goes forward, the Pampa must become an even more important factor in the production of foodstuffs and other staple crops.

PROBLEMS

In spite of its rapid expansion, Pampa farming has some serious problems still to be solved before it can reach its highest development. Transportation, labor, extent of lands too wet for crops unless artificially drained, methods of production and handling of crops, losses of various sorts, the presence of enormous land holdings, and the persistence of the grazing interests, all present conditions which are unfavorable to a speedy realization

of the full possibilities of the region. Thus with only about one-third the available area under crops, it may be a long time before farming covers as much of the Pampa as it should.

Handling Products

Facilities for handling crop products still are far from adequate. The lack of elevators compels the handling of grain in bags (Figs. 9 and 11), which costs the farmers millions of dollars (from $12,000,000 to $15,000,000) a year and commonly involves much loss of grain in handling. Storage of corn, on the farms, in the primitive cribs (*trojes*) made of cornstalks (Fig. 10), paves the way for severe damage when the after-harvest season is marked by unusually abundant rain. The needs of most sections cannot be met by the long hauls over poor roads to railroads congested with after-harvest traffic. More railroads, a system of country grain elevators, and more storage capacity in the ports depend only on interesting more capital in such enterprises; but building a system of good roads is a very different problem, inasmuch as fine soil, poorly drained flat land, and lack of road-making material are the rule.

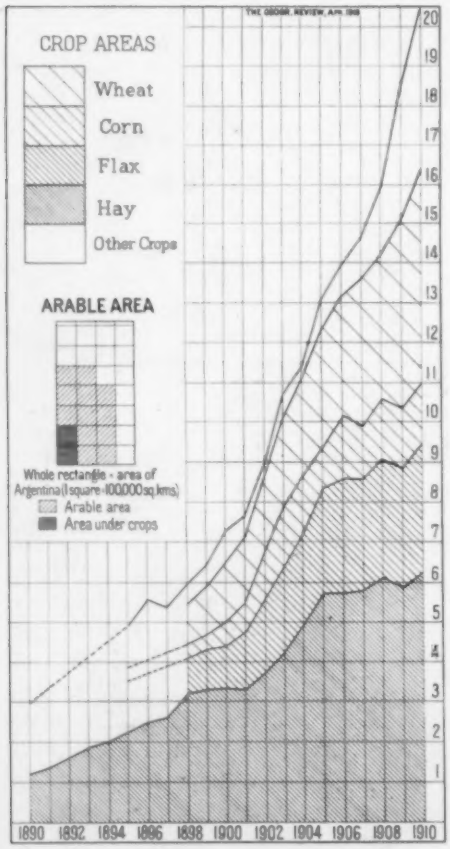
CROP AREAS
Wheat
Corn
Flax
Hay
Other Crops
ARABLE AREA
Whole rectangle - area of Argentina (1 square = 100000 sq.kms.)
Arable area
Area under crops
1890 1892 1894 1896 1898 1900 1902 1904 1906 1908 1910
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Fig. 7—Graph showing the areas in millions of hectares (1 hectare = 2½ acres) devoted to the principal crops in Argentina from 1890 to 1910. The inset represents the ratio of cultivated and arable land to the total area of Argentina.

Seasonal Labor

The population is much too small to cultivate all the land that is available. It is inconceivable that only about 6,000,000 people (the total in the Pampa) could provide labor enough to cultivate upwards of 160,000,000 of acres. In fact, the harvest now is completed only with the help of migratory laborers from Italy and Spain, the number of these seasonal immigrants running as high as 150,000

in normal years. Agricultural colonizing is encouraged by both public and private interests, but progress through these agencies has been slow, because of the high prices demanded for land.

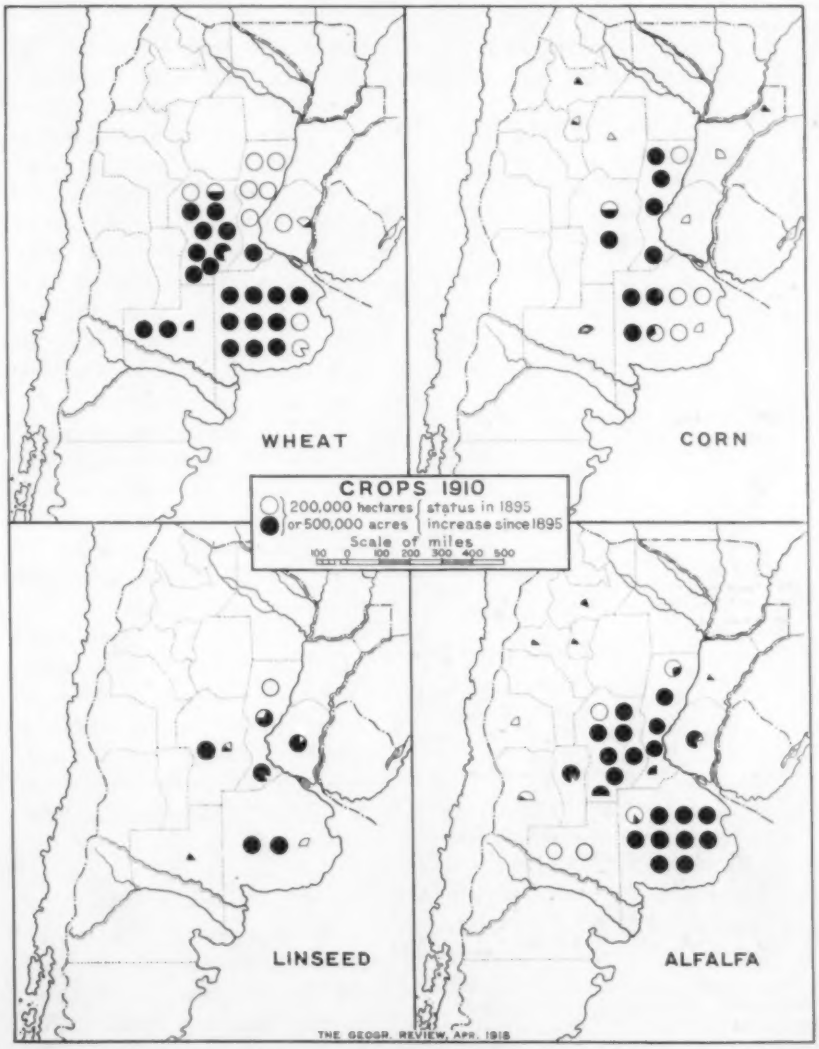

FIG. 8—Four cartograms showing the distribution of the wheat, corn, linseed, and alfalfa crops in Argentina in 1910 and their increase since 1895. Scale of each, 1:36,000,000.

DROUGHTS AND LOCUSTS

Liability to drought and locust plagues, expectable in all such new regions, has perhaps helped to discourage farming in some sections. The

FIG. 9.

FIG. 10.

FIG. 9—A Pampa road in dry weather, and grain on the way to the railroad.
FIG. 10—A corn crib (*troje*), and the preparation of corn for shipment.

FIG. 11.

FIG. 12.

FIG. 11—Typical after-harvest scene at the railroad station. Thousands of tons of grain in sacks stacked in the open.

FIG. 12—The water front at Rosario, one of the Pampa ports on the Rio Paraná. Note the high bank which determined the location of the city.

drought factor, however, is less serious than some seem to believe and presumably will diminish as farming methods are improved. Losses from unseasonable heavy rains are perhaps just as serious but not so prominently mentioned. Invasions of locusts have led to serious losses at times; but, judging from other cases, that factor will disappear as tillage is extended widely and adjacent areas are populated.

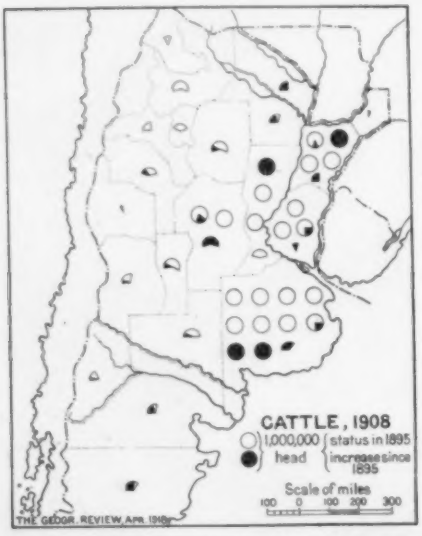

FIG. 13—Cartogram showing the distribution of cattle in Argentina in 1908 and their increase since 1895. Scale, 1:36,000,000.

LARGE ESTATES

Enormous estates (*latifundia*), reckoned in hundreds of square miles, are common to all parts of the Pampa—a logical heritage from a pastoral era. Many of these estates are made up of land that is ideal for cereals but bears no crops to be harvested. Subdivision of some of these great tracts is going on, as shown by recent investigations, but less rapidly than is desirable; while, on many estates, tenant farming is encouraged, mainly as a means of extending alfalfa lands for fattening cattle. Various reasons may account for such a condition. The profits from cattle or sheep raising, conducted on the gigantic scale typical of these *estancias*, may give the owner an income large enough to gratify all desires. Hence there is little incentive for such owners either to embark in farming or dispose of their land to farming colonists. Other great cattle and sheep *estancias* persist because they are too far away from transportation to make crop raising as convenient or as profitable as grazing, because the market price of the land is increasing so rapidly as to tempt the owner to hold for still further rise in prices, because labor is unavailable, and so on. Of all the problems confronting agricultural expansion, this one of size of holdings is probably the most serious because it seems to be the most difficult to remedy. Just as long as the large estates persist much of the Pampa will remain untilled, and much of the area tilled will suffer from poor methods and the other common ills of tenant farming. There is no public domain in the Pampa to offer immigrants the lure of cheap land; instead, all Pampa land has a price, largely fixed by transportation facilities, rainfall, and level of the water table, but also affected by speculation, and in most cases beyond the reach of the average immigrant's capital.

The Cattle Industry

It is, of course, impossible to bring farming into a pastoral region, as the Pampa was, without modifying grazing activities. Thus the century-old practice of range grazing of cattle on native grasses has been replaced by universal dependence on fenced pasturage and the practice of fattening on some introduced forage crop like alfalfa or (recently) corn. These changes have nearly eliminated the picturesque figure of the *gaucho*, a typical product of the Pampa, but they have paved the way for better cattle and larger profits for the *estancieros*. The development of refrigerating plants and packing houses in the ports also has made it desirable to produce a better quality of beef than was available or necessary in the days when the wasteful *saladero* and cheap *tasajo* ruled. Despite these changes and the diversion of some 50,000,000 acres to crops, the Pampa still dominates the cattle industry of the country, the number of cattle there has increased slightly (Fig. 13), and the returns from the industry are nearly doubled. Thus good steers which brought less than $30 per head in Buenos Aires fifteen years ago, lately have sold close to $60, with extra quality priced still higher. Partly as a result of its own progress in beef production and partly as a result of declining surplus elsewhere, the Pampa has become the chief supply region in world beef trade. The development of farming, therefore, has been accompanied by much improvement in the cattle industry, with promise of further advance as forage supplies are increased and more fully utilized. Great quantities of ensilage, incidental to corn production, now largely go to waste, while the natural fitness of the Pampa for dairying has hardly been realized yet.

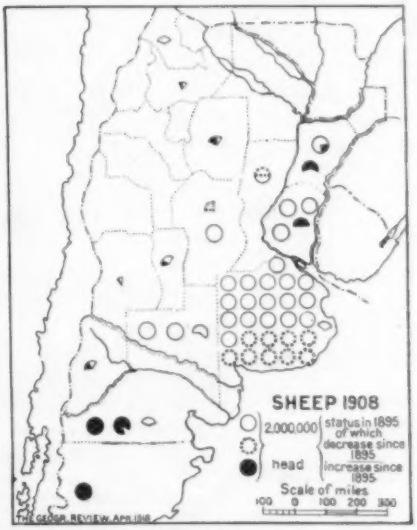

FIG. 14—Cartogram showing the distribution of sheep in Argentina in 1908 and their increase and decrease since 1895. Scale, 1:36,000,000.

Sheep and Swine

Sheep raising, on the other hand, shows a marked decline in the Pampa as crops have become more general. In the province of Buenos Aires alone, there were upwards of 52,000,000 sheep in 1895; at the 1908 census there were only two-thirds as many. Other Pampa provinces show a similar tendency, but the Pampa still is the mainstay of sheep raising (Fig. 14).

Without developments elsewhere to balance the shrinkage in the Pampa, sheep have lost in relative importance in the country, despite better markets and enhanced prices for their products. There has, however, been a considerable development in the southern territories—Rio Negro, Chubut, Santa Cruz, and Tierra del Fuego. It seems not unlikely that further displacement of the sheep industry, until it largely disappears, must result from expanding crop areas, since sheep do not seem to fit as cattle do into a system of general farming. Their place is quite sure to be filled by swine, especially in view of the kinds of crops to be raised and the ready market for pork products. With a mild climate reducing needs for winter housing, simplifying the problem of feeding, and lowering risks of loss from severe weather, cattle and swine raising seem to have an assured place in general farming.

Relations of Progress to Commerce

The rivalry between crop and pastoral products for first place in the trade from the Pampa did not become acute until about 1900 (Table VI), for up to that time the greater importance always was on the side of the older staples. The ultimate leadership of crop products, however, was as inevitable as the passage of time. They came to the front just about thirty

Table VI—Average Annual Value of Agricultural and Pastoral Products in Export Trade

Years	Total	Pastoral	Agricultural
1896-1900	$138,260,000	$ 83,750,000	$ 50,350,000
1906-1910	344,890,000	135,520,000	198,100,000
1912	480,300,000	188,200,000	278,100,000

years after real expansion of farming began, and since about 1905 the margin separating the value of crop exports from the value of animal exports has steadily widened. Thus in spite of the fact that most of its area still is devoted to animals, the Pampa commercially has become in effect a true agricultural region, the developments of three decades having surpassed those of three centuries.

Increasingly efficient use of Pampa resources, for both animals and crops, has greatly stimulated the foreign trade of the country (Table VII),

Table VII—Growth of Argentine Export Trade

Years	Average Annual Value	Years	Average Annual Value
1861-65	$20,200,000	1891-95	$104,300,000
1871-75	42,800,000	1901-05	226,400,000
1881-85	65,250,000	1906-10	344,890,000

because of rapidly increasing surplus (Table VIII), and this growth of trade has lifted Argentina from a secondary position among the republics of South America to undisputed first rank, now far ahead of all former

TABLE VIII—INCREASE IN STAPLE EXPORTS FROM PAMPA CENTERS

	WHEAT AND FLOUR (TONS)		CORN (TONS)		FLAXSEED (TONS)	
	BUENOS AIRES	ROSARIO	BUENOS AIRES	ROSARIO	BUENOS AIRES	ROSARIO
1884.....	34,943	44,203	67,772	3,433	13,474	2,288
1900.....	466,015	808,558	265,856	202,872	55,509	72,668
1908.....	943,760	1,078,360	422,241	766,855	279,374	360,727

rivals. A pastoral Pampa kept the country behind Brazil and close to Chile in commercial importance; but a crop-raising Pampa has given Argentina a place among the first ten commercial nations of the world. Few other countries (only one in South America) equal it in the per capita value either of exports or of imports. Few others contribute so great supplies of foodstuffs to the world's markets, and few others offer a better market for miscellaneous merchandise. Port improvements, costing hundreds of millions of dollars, have been necessary to provide for the constantly increasing traffic, as a result of which Buenos Aires, long hampered by a miserably poor harbor, is now one of the best equipped ports in the world.

EFFECTS ON POPULATION

Agricultural and commercial expansion have provided the basis for a rapidly growing population, which is still far short of the capacity of the country. The population is mainly in the Pampa but is sparse even there (Fig. 16), density of population corresponding closely to percentage of land cultivated (Fig. 15). Large per capita value of trade and great bulk of wares to handle have called for an apparently undue share of the population (about one-third) in the commercial centers, the development of which has gone forward with almost unparalleled rapidity, particularly for those which lie along the Rio Paraná and the coast. Buenos Aires, Rosario, and Bahia Blanca are the chief centers. Buenos Aires alone had attained much prominence prior to the period of expansion, but most of its importance is clearly in the later period, as indicated by its growth since 1888 from 455,000 to more than 1,500,000 inhabitants. It now ranks second only to New York among the ports of the two Americas, and is the second great Latin city in the world. Rosario, a small town in 1870, now is the second city of the republic, with a population of 230,000, and ranks among the leading trade centers of the continent (Fig. 12); and Bahia Blanca has grown in the last twenty-five years from almost nothing to a city of 75,000 inhabitants. The old provinces and cities of the Andean region meantime have been left far behind by this vigorous Pampa growth.

Much of the growth of population has been due to immigration, amounting to upwards of 4,000,000 in the half-century following 1860. The opportunities in the Pampa attracted people of many nationalities, but mainly Italians (2,500,000) and Spanish (850,000). Thus many new elements have been added, with important results: (1) the very small African infu-

sion (from colonial domestic servants) has been submerged to the vanishing point; (2) the *mestizo* type, originally less important here than elsewhere, has been reduced to a negligible fraction; (3) a conglomeration of European elements prevails to a greater degree than in any other section of the continent; (4) the present inhabitants of the Pampa are almost as much Italian as Spanish; (5) an entirely new nationality is developing there out of this combination of sturdy European stocks, under conditions quite unlike, but in the main more desirable than those from which the various stocks came.

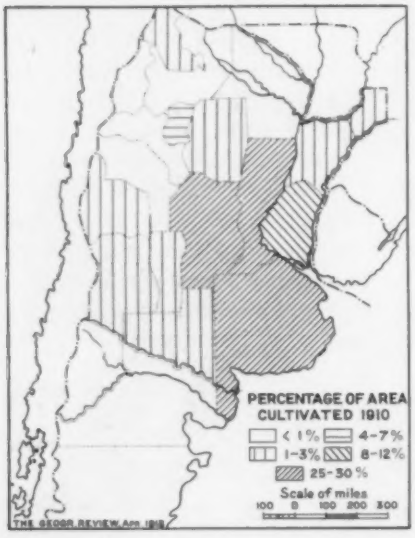

FIG. 15—Sketch map showing, by provinces, the percentage of land cultivated in 1910 in Argentina. Scale, 1:36,000,000.

As yet most of the rural Pampa population is living under conditions involving many disadvantages; except for the *quintas* of the wealthy *estancieròs*, dwellings are small and unattractive, presumably because of shortage of supply and cost of building material; comforts, as viewed from standards in the United States, are largely unknown; contact with the outside world is limited; and the higher interests of life find but small place. These aspects of Pampa life, however, are little different from those characteristic of the Illinois prairies in early days. Time should eliminate present drawbacks; and, with good material as the basis and with favorable environment, the Pampa population should ultimately reach as high attainments as are possible in the continent. The only elements of uncertainty appear in the possible effects of monotony of landscape and singleness of agricultural pursuit. Whether these will permit the production of a nation permanently virile and aggressive is still to be proved.

CONCLUSION

The Argentine Pampa may be described, then, as a young, grassy plain, naturally ideal for pastoral and agricultural pursuits, wherein for a long time the primitive grazing interests were dominant and still hold a prominent place, but where steadily they are being forced to give way to the more profitable use of the land for crop raising and scientific breeding of animals. It must be thought of as a region in transition from relatively

small importance to one of great importance in general agricultural production. It is a region in which only a fraction of the possibilities so far has been utilized, but the utilization of that fraction, small as it is, has been sufficient to bring the country into the front rank of agricultural and commercial nations. Within the Pampa are found the larger share of population, of transportation facilities, of productive enterprises, and commercial activities of the republic; so that, however closely the Pampa may have been rivaled by other less favored parts of the country in earlier years, it now stands so far ahead that it completely overshadows all the rest. The Pampa is today unquestionably Argentina, and in that area of approximately 250,000 square miles are found also the main assets on which future Argentine development largely is to be based. With so dominant a part to be played by this region, it seems probable that Argentina will offer an ideal opportunity for observing the evolution of a distinct nationality and its institutions in a great agricultural state.

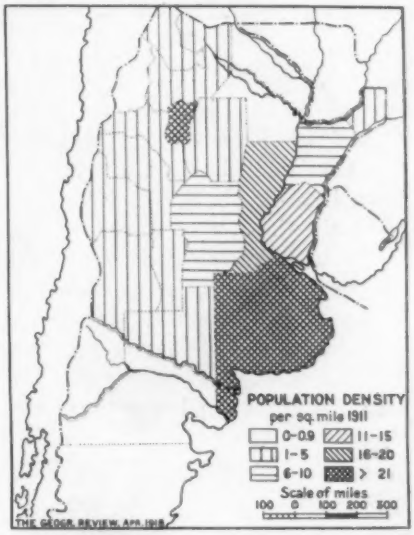

FIG. 16—Sketch map showing, by provinces, the density of population of Argentina per square mile in 1911.

THE INFLUENCE OF GEOGRAPHICAL ENVIRONMENT UPON RELIGIOUS BELIEFS*

By R. H. WHITBECK
University of Wisconsin

In his "History of Mankind" Ratzel says:[1] "Ethnography knows no race devoid of religion, but only differences in the degree to which religious ideas have developed." Tolstoy ("What Is Religion?") is even more emphatic: ". . . . never in any society of men since men first became rational creatures could they live or have they lived without a religion." Notwithstanding such unequivocal declarations, there are reported cases of tribes in Australia, Tasmania, and some islands of Oceania among whose members no evidence of religious ideas could be detected. Such tribes, however, have been exceedingly rare; moreover, the utter absence of religion among them is not admitted by all who observed and mingled with them.[2] It is almost universally true that mankind, wherever found, has possessed some beliefs that were essentially religious. Among the very lowest of these superstitions is the fetish worship of the negro tribes of Africa. In the main, this consisted of a crude worship of inanimate objects—even stones, or pieces of wood—believed to possess some charm or magic.

Scope of this Article

With this or similar irrational superstitions of the lowest races this paper does not deal. Rather is it concerned with religion in the middle stages of human culture; religions which were the product of thoughtful observation of natural phenomena; those religions which represent the human mind groping for an explanation of the seemingly supernatural. Most of these religions belonged to peoples who have a recorded history and who have left a literature, hymns, or sacred books—the Aryans of India, the early Persians, the Egyptians, Hebrews, Norse, and Teutons; or people of more recent time but not high culture whom modern scholars have studied, such as the North American Indians, the Aztecs, the Incas, and the tribes of Central and Northern Asia. Among such peoples, wherever they existed, there has always been found a religion befitting their stage of culture and clearly influenced by their geographical environment.

* The writer wishes to acknowledge the assistance of Miss Annie Kirch, formerly a graduate student in the Department of Geology and Geography in the University of Wisconsin; also the criticism of the manuscript by Professor W. L. Westermann of the Department of History.

[1] Friedrich Ratzel: History of Mankind (translated from the 2nd German edition), 3 vols., London, 1896-98; reference in Vol. 1, p. 40.

[2] Wilhelm Bousset: What Is Religion? (trans.), New York, 1907, pp. 1 and 11.

Factors in Religion

Many factors combine to mold a people's religious beliefs. Geographical environment necessarily is one of these—sometimes a conspicuous influence, sometimes only perceptible in minor ways. In certain of the old religions, that of Greece for example, made up of elements borrowed from many sources and modified by the contributions of many peoples through a long past, the influence of geographical environment had nearly ceased to be distinguishable. As a matter of fact, most of the historic religions of the Mediterranean region and southwestern Asia had had a long evolution and had acquired this composite character when we first know of them, yet all of them reflect the influence of the lands and climates in which they grew, and some of them to a notable degree.

Why should it not be so? Would anyone expect a people's religion, or philosophy, or literature to grow up without being influenced by the physical environment amid which it unfolded? In the very nature of things any system of religious belief, in order to grow into acceptance as a belief, must be in some sort of harmony with the mode of life, the economic interests, and the geographical environment of the people. It is obvious that if a tribe or group of tribes came to believe in the existence of certain deities, they must have had experiences which engendered these beliefs; for such beliefs grow out of experience, however distorted or illogical may be the deductions from it. No small part of the religions of the type with which we are dealing grew out of man's early attempt to explain the phenomena of nature which he saw about him but which he could not comprehend. For example, he had not the slightest knowledge of why it lightened, thundered, or rained; why the wind blew, or the winter came; why the sun rose and set. To him all such phenomena were mysteries, and he tried to satisfy his mind concerning them by inventing fanciful myths as we now invent more scientific hypotheses.

Bases of Myths

Tylor considers that all myths are early man's inventions to satisfy his desire to know "why?";[3] Andrew Lang regards them as savage man's way of satisfying the early form of scientific curiosity.[4] He says that savages give personality to sky, wind, sun, earth, etc., and think of them as beings of some sort actuated by such motives as they themselves entertain.

Max Müller inclines to the belief that religion grows out of "man's sense of the Infinite as awakened by natural objects calculated to stir that sense."[5]

Bousset says: "Everything that is unusual, strange, or unexpected

[3] E. B. Tylor: Primitive Culture, 2 vols., London, 1871.

[4] Andrew Lang: "Mythology" in Encyclopædia Britannica, 11th edit., Vol. 19, p. 128.

[5] F. Max Müller: Lectures on the Origin and Growth of Religion, New York, 1891.

attracts the religious attention of the savage . . . . . Religion rests upon fear of more or less unknown powers which everywhere surround the existence of man."[6] Frazer states it thus: "A god is always brought in to play the part of a cause: it is the imperious need of tracing the causes of events which has driven man to discuss or invent a deity."[7]

Relation of Nature to Human Life

Early man was impressed by those particular phenomena of nature which seemed most to affect his life. These might be the sun, the rain, the wind, the overflow of a river, or something else. At any rate they would be the elements of his particular environment. The ocean, for example, would not, in the very nature of the case, be expected to play a part in the mythology of the tribes of interior Asia or of Central Africa; but it did play a part in the mythologies of Greece, Rome, and Scandinavia. The annual overflow of a river was a matter of utmost consequence to the people of Egypt; the cause of the periodical rise of the Nile was a mystery, but the people knew that their very lives depended upon it, and the adoration of the Nile inevitably became a part of their religion; but there was no such river to influence the religion of Palestine or Norway or Persia.[8] Again, the occurrence or the failure of the monsoon rains is a matter of plenty or of famine to the people of India, and these seasonal rains could scarcely escape playing a part in the early religions of that country; but to the aborigines of the Amazon Valley, where the rain is so frequent as to be an annoyance, the rain giver might easily be held in disfavor.

Friendly and Unfriendly Gods

A god is beneficent if he gives us what we in our particular environment most feel the need of, and he is malevolent if he withholds it or sends what we do not desire. Happenings over which man has no control may be either beneficial or baneful to him; he can not account for these except on the supposition that there are good deities and evil ones, and so mythologies always involve the existence of friendly gods and unfriendly ones. The satan of Egypt, according to Plutarch, was Typhon, a malevolent deity that sent the hot wind and dried up the pools and the soil and parched the vegetation. The satan of India was Vritra, the serpent which, in the form of clouds, caught and held back the rain, for the ancient Hindus thought the rain fell from above the clouds and was caught by them. Indra, the beneficent god, pierced them with his lightning and liberated the rain. In Norway the evil deities were the frost giants (or

[6] Bousset, *op. cit.*, pp. 35-37.

[7] J. G. Frazer: Belief in Immortality (Gifford Lectures), New York, 1913, Vol. 1, p. 22.

[8] Plutarch considered that Osiris, one of Egypt's two chief deities, originally typified the Nile, and Isis the land of Egypt, and that their wedding was the overflow of the Nile.

mountains) against whom Thor and Odin and other deities waged relentless war.[9]

It is not surprising that a primitive people should thus associate the phenomena of nature which benefited them with good deities and the phenomena that injured them with bad deities, and that all this reasoning was influenced by the character of the land and climate in which the people lived.[10]

Various Heavens

In all religions that recognize a future life, heaven is a place where happiness is to be had; but man's conception of what complete happiness consists in is inseparable from his mode of life, as well as from his stage of enlightenment. To the American Indian's thought heaven was a hunting-ground, abounding in game, and a place to which dogs as well as men might go. The Indian's conception of paradise was born of his mode of living, and that was a response to his particular environment while he was in a certain stage of development—the hunting stage. But his heaven would not be that of pastoral tribes of steppes, of island fisher folk, of agricultural peoples of flood plains, or of nomads in deserts. When James Bryce visited the lofty plateaus of the Central Andes he wrote: "One is never warm except when actually in the sunlight . . . . . The inhabitants get accustomed to these conditions and shiver in their ponchos, but the traveler is rather wretched after sunset and feels how natural was sun-worship in such a country."[11]

The Blessing of Rain

Among the Indian tribes of our Southwest religious ceremonies were notably directed to the securing of rain. The majority of all the ceremonies of the Hopis are for rain and crops, and their prayers to clan or other gods are to secure these things.[12] Summarizing his account of the elaborate ceremonials of the Hopi Indians, whose word for "blessing" is the same as for "rain," Fewkes says:[13] "The necessities of life have driven man into the agricultural condition, and the aridity of the climate has forced him to devise all possible means at his control to so influence his gods as to

[9] "The influence that the outward features of a country exercise upon the thoughts and feelings of men, especially during the vigorous, imaginative, poetic, and prophetic childhood of a nation, can hardly be overestimated. Necessarily, therefore, do we find this influence affecting and modifying a nation's mythology, which is a childlike people's thoughts and feelings, contemplating nature reflected in a system of religion." (R. B. Anderson: Norse Mythology, 3rd edit., Chicago, 1879, p. 64.)

[10] "The Vedic poems furnish indisputable evidence that such as this was the origin and growth of Greek and Teutonic mythology. In these poems the names of many, perhaps of most, of the Greek gods indicate natural objects. . . . In them Daphne is . . . . the morning twilight . . . .: the cattle of Helios . . . are . . . . the light-colored clouds . . . : Herakles [is] the toiling and struggling sun." (G. W. Cox: Mythology of the Aryan Nations, 2 vols., London, 1870; reference in Vol. 1, p. 52.)

[11] James Bryce: South America: Observations and Impressions, New York, 1912, p. 172.

[12] J. W. Fewkes: An Interpretation of Katcina Worship, *Journ. Amer. Folk-Lore*, Vol. 14, 1901, p. 92.

[13] J. W. Fewkes: The Tusayan Ritual. *Ann. Rept. Smithsonian Inst. for 1895*, pp. 683-700.

force them to send the rains to aid him. Wherever we turn in an intimate study of the ceremonials of the Tusayan Indians, we see the imprint of the arid deserts by which they are surrounded, always the prayer for abundant crops and rains for his parched fields." Each environment will breed its own mode of thought, its own philosophy of life, its own religious beliefs.

The Desert Nomad's Paradise

In Norse mythology, heaven was a place of warmth and hell a place of cold and mist; but in the religions of Palestine and Arabia, hell is a place of heat—of eternal fire. To the Arab of the desert, paradise was dreamed of as an oasis, or a garden, always having flowing water, shade trees, and fruit. A few of many passages in the Koran will indicate the desert nomad's idea of paradise; Mohammed naturally pictured to his followers the kind of heaven which desert tribes would desire, and so he writes: "This is the description of paradise, which is promised to the pious. It is watered by rivers; its food is perpetual, and its shade also: this shall be the reward of those who fear God; but the reward of the infidel shall be hell-fire."[14] And again: "Those who fear God shall dwell in gardens, amidst fountains."[15] "God will introduce those who shall believe, and act righteously, into gardens through which rivers flow."[16]

This same conception of the fitting place for the good and for the wicked after death was taught by Zoroaster to the Persians more than a thousand years before the Koran was written. In Max Müller's translation of the "Sacred Books of the East" is given Zoroaster's picture of the abode of the wicked after death:[17] "If a person sins, his dwelling place shall be the place on this earth wherein is least water and fewest plants; whereof the ground is cleanest and driest and least passed through by flocks and herds." Plainly, this is a pastoral people's conception.

Rain and Resurrection

Even the Mohammedan's belief in the resurrection of the dead seems to be based upon what he saw about him in his arid environment. He saw the annual death of the sparse vegetation, but later saw this spring into life when the rain came. Mohammed writes: "God sendeth down water from heaven and causeth the earth to revive after it hath been dead. Verily herein is a sign of the resurrection unto people who harken."[18] "Consider therefore the traces of God's mercy; how he quickeneth the earth, after its state of death; verily the same will raise the dead; for he is almighty."[19] "One sign of the resurrection unto them is the dead earth; we quicken the same by the rain, and produce thereout various sort of grain, of which they eat."[20]

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[14] Koran, Ch. 13. [15] *Ibid.*, Ch. 15. [16] *Ibid.*, Ch. 20.
[17] F. Max Müller: The Sacred Books of the East, London, 1879-1895, Vol. 4, p. 3.
[18] Koran, Ch. 16. [19] *Ibid.*, Ch. 30. [20] *Ibid.*, Ch. 36.

The Walled City

To the ancient Hebrew of Palestine, living in an agricultural and pastoral land surrounded by marauding desert tribes and always open to raids, a walled city seems to have been the symbol of safety, a place to which one might flee and find peace and security. Through the association of ideas the Hebrew writers made heaven a walled city with gates of pearl and streets of gold. Such a conception would not occur to people whose warring life and whose environment did not make the walled city a place of security, refuge, and desire.

Whether a people conceive of heaven as a place of eternal rest, or as a garden with shade and flowing water, or as a happy hunting ground, or a walled city, or as a great hall like the Norse Valhalla, where those who die in battle continue to fight for Odin, will naturally depend upon what that particular people regards as the acme of happiness; and this in turn will depend upon the special kinds of discomfort, privation, unhappiness, want, and suffering to which that people is subjected—in short the adverse elements in its environment.

Metaphors Drawn from Environment

Religious teachings and doctrines are commonly metaphorical in phraseology. This being the case the metaphors must be drawn from the peoples' environment if they are to be effective.[21] The Founder of Christianity said, "I am the vine; ye are the branches." He probably would not have chosen that phraseology in England or Norway. Referring to his followers he said, "Feed my lambs," "The sheep shall be separated from the goats," "I am the good shepherd and know my sheep," "The shepherd giveth his life for his sheep," "I will send you forth as sheep in the midst of wolves," and scores of similar expressions. It is said that when the missionaries in Greenland sought to present these passages to the Eskimo they found it necessary to change "sheep" and "lambs" to "seals" and "little seals"; otherwise the figure meant nothing to him. The repeated references of our Bible to the vine, the fig, the olive, the sheep, and the goats, are clearly a response to the environment and mode of life characteristic of Palestine and regions like it. Had the Founder of Christianity lived elsewhere, the parables and the metaphors which he used must have been differently chosen to be made impressive.[22]

Norse Mythology

Among all of the Teutonic and Celtic peoples trees and groves played a part in religious ideas. According to the ancient Norse mythology the

[21] "In all the phrases which describe India the local coloring arising from the climate of northern India may be plainly discerned." (Cox: *op. cit.*, p. 161.)

[22] "The character of mythical speech must necessarily be modified and its very phrases suggested by the outward features and phenomena of the country..... The speech of the tropics ... would tell rather of splendor than of gloom.... But in the frost-bound regions of the North, the speech of the people would with a peculiar intensity of feeling, dwell on the tragedy of nature." (*Ibid.*, p. 37.)

original man and woman were created from an ash and an elm tree, and Odin's mighty ash, Yggdrasill, supported the universe. Such conceptions were as consistent in the forest lands of northern Europe as was the worship of the Nile in Egypt or of the sun in Peru.

The Norse mythology is notably influenced by the geographical environment, especially the cold climate, wind-swept mountains, and fiorded coast. In warm and sunny Greece mountains were conceived of as a place of delight, fit for gods to dwell in, especially Mt. Olympus and Mt. Ida. In the teachings of Zoroaster also the gods dwell on mountain tops. But these were not the snow-capped, storm-swept, forbidding mountains of Scandinavia. In cold Norway the mountains were regarded as a race of hated giants against whom the gods continually fought; the blows of Thor's hammer, as he smote the giants, made the thunder. Odin's eight-footed horse was the wind from the four cardinal and four semi-cardinal points. Baldur, the best-loved of Odin's sons, was the summer sun that ruled for a short season, only to be slain each winter. Njord was ruler of the ocean winds and restrainer of the sea's fury; while Frey, the son of Njord, presided over rain and sunshine and was the giver of the harvest. Each of the three great Norse festivals was related to the change of the seasons. As Anderson repeatedly points out, the early Norse religion was emphatically a product of the Norseman's land and climate. Although not a geographer and so not viewing things with a geographic eye, he yet holds that all mythology is the impersonation of nature's forces and phenomena. He says: "Not only the mythology considered as a whole, but even the character of its speech and its very words and phrases must necessarily be suggested and modified by the external features of the country."[23] "The harsh climate of the North modified not only the Norse mythology, but also molded indefinitely the national character, and then the two, the mythology and the national character, acted and re-acted upon each other." "Beholding in external nature and in his mythology the struggle of conflicting forces, he naturally looked on life as a field for warfare. The ice-bound fjords and desolate fells, the mournful wail of the waving pine-branches, the stern strife of frost and fire, the annual death of the shortlived summer, made the Norseman somber, if not gloomy in his thoughts, and inured him to the rugged independence of the country. The sternness of the land in which he lived was reflected in his character; the latter was in turn reflected in the tales which he told of his gods and heroes, and thus the Norseman and his mythology mutually influenced each other."[24]

Changing Gods with Climate

Another land in which the climate has features that powerfully influence the life and prosperity of the people is India, with its recurring wet and dry monsoons. If the summer monsoon brought ample rain, crops were

[23] R. B. Anderson: *op. cit.* in footnote 9, p. 59. [24] *Ibid.*, p. 127.

abundant, the people were fed, and a degree of comfort prevailed; but if the rains failed, millions of people were hungry and thousands starved. A phenomenon which so controlled the welfare of the people could scarcely escape incorporation into their religion. The influence of this monsoon climate in modifying the religion which the Aryan invaders of India brought with them is most interesting. These invaders came from the arid plateaus northwest of India and entered, as all its invaders by land have entered, at the northwest. The hymns of the Rigveda throw a flood of light upon the character of these ancient Aryans. They were pastoral people and came from a region of little and uncertain rain. In India they became an agricultural people whose harvests were vitally dependent upon a regular recurrence of rain. The change in their environment and mode of life is reflected in their change of religion. When they entered India, their chief deity was Dyaus (Sky); Indra, his son, the rain-giving deity, was of minor rank. As time went on a change took place; gradually Dyaus shrank to a secondary deity, and Indra, the rain-giver, rose to the place of supreme reverence. In his "Outlines of Primitive Belief," Keary says that among the most genuine hymns of the Rigveda about 265 are addressed to Indra, 233 to Agni (Fire), and not over fifty or sixty to Dyaus or some other god.

Here is an example of the displacement of a supreme deity by a subordinate one in response to a change in geographic environment. Indra became the most revered god of the Aryans because, according to their belief, he gave them the essential thing in their existence—rain. Murray says: "In a land with the climatic conditions of India and among agricultural people, it was but natural that the god whose fertilizing showers brought the corn and vine to maturity should be regarded as the greatest of all."[25] A further confirmation is given by Hopkins: "It is impossible for any sober scholar to read the Rigveda and believe that the Vedic poets are not worshiping natural phenomena, or that the phenomena so worshiped were not the original forms of these gods."[26] He believes that climatic environment conditioned the evolution of Hindu theology.

Faith and Phenomena

Keary is authority for the statement that the specialists in every field, Vedic, Persian, Greek, Roman, Teutonic, and Celtic, believe themselves to have discovered that the religious creeds of all these peoples go back to the worship of the phenomena and objects of their natural environment.[27] He goes so far as to declare that never in early times shall we find a god unlinked to external phenomena. "Wherever we turn," says Brinton,[28] "in time or in space to the earliest and simplest religions of the world, we find them

[25] A. S. Murray: Manual of Mythology, London, 1873, p. 330.

[26] E. W. Hopkins: The Religions of India (Handbooks on the History of Religions, edit. by M. Jastrow), Boston, 1895, p. 10.

[27] C. F. Keary: Outlines of Primitive Belief, New York, 1912, p. 10.

[28] D. G. Brinton: Religions of Primitive Peoples, New York, 1897, p. 9.

dealing with nearly the same objective facts in nearly the same subjective fashion, the differences being due to local and temporal causes." Speaking of the origin of myths, Murray says:[29] "It seems probable that the first phenomena that appealed to the mind were those of the change of the weather or seasons, the revolving day and the revolving year. At any rate, the earliest deities, as well as we can trace them, appear to be those who presided over the movements of the celestial sphere." It is common among comparative mythologists to say that the farther back you trace a myth, the more "atmospheric" the gods become.

Cox considers that the Greek and Norse mythologies sprang from the same Aryan sources; that both have grown up chiefly from names which have been grouped around the sun. The Greek mythology grew mainly out of expressions which describe the recurrence of day and night; the Norse mythology out of those which describe the alternation of summer and winter.[30] The difference seems entirely logical, for in Greece the change from summer to winter was a moderate one; but in Norway it meant the coming on of the long, dreary, sub-Arctic nights with days that had only a few hours of light.

It is said that in practically all religions of the higher order the chief deity is placed in the sky and presides over the phenomena of the sky. "Dyaus, Zeus, Divus, Theos, Deus, Juno, Diana, Dianus, or Janus, with many others, are outgrowths from the same root *dyu*, 'to shine.'"

Conclusion

In concluding his "Outlines of Primitive Belief," Keary says: "The foregoing chapters must have made it plain that the creed of a people is always greatly dependent upon their position on this earth, upon the scenery amid which their life is passed and the natural phenomena to which they become habituated; that the religion of men who live in woods will not be the same as that of the dwellers in wide, open plains; nor the creed of those who live under an inclement sky, the sport of storms and floods, the same as the religion of men who pass their lives in sunshine and calm air."[31]

It has been the aim of this paper to point out one of the significant influences which give shape to a people's religious beliefs, namely, the influence of geographical environment, and to suggest how logical it is that the religion of the Arab, of the Hindu, of the Egyptian, or of the Inca should reflect the dominant features of their environment. The writer is aware that the environment does not make the religion or necessarily even dominate it, but it inevitably modifies it. "There are," says Fewkes, "certain common components of all cults which are as widely spread as the races of man and exist independently of all surroundings, while there are others which are profoundly affected by environment."[32]

[29] Murray: *op. cit.*, p. 8. [30] Cox: *op. cit.*, pp. 30, 31, 37, 38. [31] Keary: *op. cit.*, p. 325.
[32] Fewkes: *op. cit.* in footnote 13, p. 684.

GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Monthly Meeting of February; Meetings of March. A monthly meeting of the American Geographical Society was held on Tuesday evening, February 26, at the Engineering Society's Building, 29 West Thirty-ninth Street. President Greenough presided. He submitted for confirmation the names of 216 candidates for Fellowship, each of whom had been approved by the Council, and they were confirmed as Fellows of the Society. Thereupon Dr. Henry Goddard Leach, Secretary of the American-Scandinavian Foundation, addressed the Society on "The Voyages of the Vikings." The lecture, which was illustrated, discussed the colonization of Iceland and Greenland by the old Norse voyagers and their discovery of America.

At an intermonthly meeting on March 12, at which President Greenough presided, Mr. Roy C. Andrews of the American Museum of Natural History addressed the Society on "Explorations in Western China." The lecture dealt with the zoölogical expedition undertaken under the auspices of the Museum in 1916-17 in the province of Yünnan. The explorations covered some little-traveled country in the western part of the province, the route making two loops from Talifu, one to the north and one to the south, and attaining the Mekong valley. Among the lantern slides in natural color (by the Paget process) illustrating the lecture were several remarkable views of this valley, one of the profound trenches characteristic of this region of intense folding, where the mountain systems of Central Asia in their deflection from an east-west to a southerly trend are constricted to a width of barely five hundred miles.

A monthly meeting was held on Tuesday evening, March 26. President Greenough presided. He submitted the names of 202 candidates for Fellowship, each of whom had been approved by the Council, and they were confirmed as Fellows of the Society. Thereupon Mr. Edmund Heller, formerly of the Smithsonian Institution, addressed the Society on "The Geographical Barriers to the Distribution of Big Game Animals in Africa." The lecture dealt with the physical geography of eastern equatorial Africa in its relation to the ranges of big-game animals. The lecturer drew upon the experiences of his two expeditions to the region, the Smithsonian African Expedition under the direction of Colonel Roosevelt in 1909-10 and the Rainey African Expedition in 1911-12. The results of the former are laid down in a work, written jointly by Colonel Roosevelt and the lecturer, entitled "Life-Histories of African Game Animals" (2 vols., New York, 1914; accompanied by numerous zoögeographic maps), which was extensively reviewed in the *Bulletin of the American Geographical Society*, Vol. 47, 1915, pp. 190-192. Among effective barriers to animal distribution were mentioned such rivers as the Bahr el Djebel (upper Nile) and the Tana, because of the presence of crocodiles, and the Eastern Rift Valley, the structural depression containing Lakes Guaso Nyiro, Rudolf, and Stephanie.

NORTH AMERICA

A New Standard Rainfall Map of the United States. What will, for many years to come, be the standard map of mean annual precipitation for the United States has recently been published. It is an "advance sheet" (January, 1917) from the forthcoming "Atlas of American Agriculture" under preparation by the U. S. Department of Agriculture. It embodies the best and the latest information available. It recognizes the absolutely essential importance of using only records covering a uniform period, or reduced to a uniform period. In the location of the isohyetal lines it takes reasonable account of topography and of other conditions which indicate, or which control, the amount of precipitation. It is printed in eight shades of blue (under 10 inches; 10-15 inches; 15-20 inches; 20-30 inches; 30-40 inches; 40-50 inches; 50-60 inches; over 60 inches). The isohyetal lines are drawn for every 5 inches, on a base map on the scale of 1:8,000,000 showing the topography (by hachures) clearly and in ample detail, with the names of all the more important mountain ranges and individual mountains given. The new map is not only in itself interesting and pleasing cartographically, but it brings out many details of rainfall distribution which make its close study well worth while.

The records of about 1600 stations for the 20-year period 1895-1914 have been used, together with 2,000 additional records from 5 to 19 years in length. The latter series, it is most satisfactory to note, have been "uniformly adjusted to the same period," i. e.

they have been reduced to the same uniform period of 20 years. This reduction, which is inevitably a very laborious piece of work, the large number of stations employed, and the use of records through the year 1914, combined, make the new map by far the most accurate one available for the United States. Careful distinction is made, by symbols, between the different classes of stations. A small inset map, 1:34,000,000, shows the percentage of annual precipitation occurring between April 1 and September 30 (five shades of color) and was compiled from the records of about 1,600 stations, 1895-1914. An inset diagram shows the period of the year within which 50 per cent of the annual precipitation occurs in twelve districts.

The text which is to accompany the map has not yet been published. However, the principles which were followed in drawing the map are laid down in a recent paper by W. G. Reed and J. B. Kincer (The Preparation of Precipitation Charts, *Monthly Weather Rev.*, May, 1917, pp. 233-235). These had for their aim the uniform adjustment of the available records to the same period, on the one hand, and, on the other, a critical compromise between the method relying on existing rain-gage records alone and that employing reasonable generalization on the basis of known facts of topography, run-off, stream-flow, and vegetation, where precipitation data are lacking. An interesting symposium of the various opinions on this subject was published in the *Monthly Weather Review* some fifteen years ago (Vol. 30, 1902, pp. 205-243).

The new map is made the basis for a general discussion of the rainfall of the United States by the undersigned (*Monthly Weather Rev.*, July, 1917, pp. 338-345; see also his "Rainfall Types of the United States," *Geogr. Rev.*, Vol. 4, 1917, pp. 131-144). A discussion of the essential facts of rainfall in the United States and their representation will be found in Mark Jefferson: Aridity and Humidity Maps of the United States, *Geogr. Rev.*, Vol. 1, 1916, pp. 203-208. R. DEC. WARD

A Non-Glacial Explanation of the Former Drainage of the Great Basin Area. Lately observation in the Great Basin calls into question the alleged dominant influence of a glacial climate in the production of the former large desert lakes, Bonneville and Lahontan. A simpler and more satisfactory explanation is found without recourse to climatic conditions so very different from those now existing in the region.

Ample evidence is forthcoming indicating that prior to the beginning of the Glacial Epoch two majestic rivers traversed this arid tract and flowed through to the sea. Part of the headwaters of the old river which occupied the long Bonneville basin are the headwaters of the present Snake River of Idaho. Professor W. W. Atwood has recently shown (The Physiographic Conditions at Butte, Montana, and Bingham Canyon, Utah, When the Copper Ores in These Districts Were Enriched, *Econ. Geol.*, Vol. 11, 1916, pp. 697-740) that just previous to the Glacial Epoch the basin of the Snake River extended nearly 200 miles farther to the northeastward than it now does. The continental divide then shifted 150 miles to the westward. An area nearly 300 miles square belonged to it that no longer does. This vast tract was mainly that part of the basin of the present Missouri River lying above the Great Falls. Passing Idaho Falls and Pocatello was a combined volume of waters of the present Snake River and of the Missouri River at the Great Falls gorge. This noble stream is thought to be the Old Virgen River, the superior companion of the Green River, that traversed the entire length of the Bonneville valley and fell into the Colorado River at the Big Bend in Arizona. By orographic damming of its course through the rapidly rising Colorado dome the waters of this old drainage way spread out far and wide over the illimitable desert plains. With the diversion of its headwaters the Old Virgen River could no longer furnish the chief supplies to Lake Bonneville, and the latter's waters evaporated until only a last vestige remained in the present expanse which we denominate Great Salt Lake.

In the recent migration of the continental divide in Montana the Yellowstone River took part of the Old Snake or Virgen headwater drainage, the Missouri River the great portion, the Clark Fork of the Columbia River a third share, and the Salmon Fork a part. Deprived of its headwaters and blocked by basalt flows at Pocatello, the remnantal preglacial stream was turned out over the Idaho lava fields as the diminutive riverlet that we find today as Snake River.

In a somewhat earlier effort (*U. S. Geol. Survey Prof. Paper No. 61*, 1909) Professor Atwood maps the areas once occupied by glaciers on the Wasatch and Uinta Mountains. The surprising result of this quantitative measurement is the utter insignificance of these mountain ice tongues. Neither as a direct cause, nor as an associated cause, of change in climate do they indicate that they were ever competent to effect noteworthy differences in the climatic conditions now existing.

So the former existence of great expanses of waters in the desert not only do not necessarily portend notably moister climate than that which prevails at the present day but it finds adequate explanation in the varied vicissitudes of normal river system

development. To this remarkable reversal of drainage and this still more remarkable shifting of the continental divide are ascribable all of those geographic changes which have made of Butte the greatest mining center of the world. CHARLES KEYES

Supplying the Canal Zone with Central and South American Products. The Panama Canal Commissary, in order not to draw upon food supplies of the United States for the support of the Canal Zone population, has established a considerable trade with nearby markets in Central and South America and in the West Indies (*Panama Canal Record*, Feb. 6, 1918, pp. 273-274). The provisions handled by the Zone authorities for the canal workers were formerly brought largely from this country, while the rich tropical lands of neighboring districts were drawn upon for little but the most perishable goods. Haiti and Costa Rica now supply most of the fresh fruit and vegetables. Coffee comes from these two countries and from Colombia. The latter also furnishes cattle, hogs, and poultry. Sugar is imported from Nicaragua and Colombia. Beans of several kinds are supplied by the west coast countries of South America, Haiti, and Costa Rica. Besides accomplishing its purpose of helping to relieve the food situation in North America, this plan will possibly lay the foundation for permanent trade relations with the districts near the isthmus and so foster the agricultural development of those regions, one of whose difficulties has always been the lack of convenient markets for their produce. Though the population of the Canal Zone will not be large, since most of the strip is being depopulated, yet, combined with the constantly increasing business of furnishing supplies for the steamers that use the canal, the trade should assist in making the Panama cities active commercial centers.

SOUTH AMERICA

South American Boundary Disputes, Settled and Unsettled. By treaty of July 15, 1916, Colombia and Ecuador came to agreement over their common frontier. The frontier thus defined terminates on the Pacific Coast along the Mataje River, south of the Mira, thus giving all the Mira delta to Colombia. East of the Andes Colombia is awarded the greater part of the basin of the Putumayo, the boundary running for the greater distance along the watershed between the rivers Putumayo and Napo. The eastern half of this region is, however, still in dispute with Peru. On the inset map accompanying Hermessen's article on the Rio Zamora (*Geogr. Rev.*, Vol. 4, 1917, p. 436) the new frontier is shown as far as its meeting with the line of the Peruvian-Ecuadorian frontier as shown on Pl. 212-213 of Andree's "Handatlas," 6th edition, Leipzig, 1914. Thence it runs along the Ambiyacú River to the Amazon. The text of the treaty is given in the *Revista de Geografía Colonial y Mercantil* (published by the Royal Geographical Society of Madrid), Vol. 14, 1917, No. 5-6, pp, 179-180.

The boundary between Ecuador and Peru constitutes one of the major South American frontiers still unsettled. Local interest in it has lately been revived through the railroad plans now under consideration by the governments of the respective countries. Peru is contemplating a line from Paita, her chief northern port, to the navigable waters of the Marañon, whereby the Amazonian port of Iquitos would be put into communication with the Pacific. Ecuador has three railroad projects which would materially aid her in making good her claims to the debated territory. One is completion of the Ambato-Curaray line, a line to the eastern lowlands; rails have been laid for 20 kilometers. A second is completion of the line from Puerto Bolivar, on the Gulf of Guayaquil near Machala, to the plateau town of Cuenca and thence extension to Loja near the present frontier. The third line contemplated, from Sibambe to Cuenca, would connect the proposed Loja line with the existing Guayaquil-Quito line (The Northern Frontiers: A Railway Struggle, with map, *West Coast Leader* (Lima, Peru), November 3, 1917; republished under the title of "A Long-standing Controversy," with new illustrations and map, in *The South American* (New York), January, 1918).

Of a more unique character is the dispute between Argentina and Uruguay (Argentina and Uruguay Boundary Dispute, *The South American*, January, 1918, from the *River Plate Observer*). When Uruguay was created by agreement between Argentina and Brazil in 1828 the southern boundary of the new republic was defined as the *coast* of the Rio de la Plata. Uruguay therefore has no legal control over the La Plata waters. In time of peace navigation on these waters is free to all nations, but Argentina reserves the right to close the river in case of war. Uruguay, seeking a more reassuring status, claims a right to one-half the river. Argentina objects in part on the grounds that the safeguarding of the great highway that leads into the heart of the continent cannot be entrusted to a small nation; in part because under the peculiar hydrography in question an adjudication according to international practice would prove unfavorable to her. The current of the La Plata swings towards the Uruguayan coast, where is to be found the

channel navigable for large craft. A division of the river in the middle would completely shut off Argentina from deep water. A division along the natural *talweg* would give the island of Martin Garcia, the military key to the upper rivers, to Uruguay.

EUROPE

The Geographical Basis of Alsace-Lorraine's Attachment to France. In a recently published work (La France de l'Est: Lorraine-Alsace, 280 pp., 2 maps, Colin, Paris, 1917) the dean of French geographers, Professor Vidal de la Blache of the Sorbonne, gives an admirable account of the geographical basis of the development of Alsace-Lorraine—the "France of the East." So, says the author, may be generically termed the region between the Rhine, the Meuse, and the Ardennes. What are the bases for it?

In history Alsace and Lorraine have repeatedly figured as frontier countries. It was inevitable, for they lie between peninsular Western Europe and Central Europe of the illimitable hinterland. Yet more than a frontier, this region—to consider the two countries together—anciently has figured as a connecting link, a passageway or rather as a place of crossroads. By the Alsatian Rhine the Danubian ways are linked with northern Germany. By the Moselle and the Toul Gap influences from the Paris Basin penetrate eastward. The Gap of Belfort and the Saône respectively connect Alsace and Lorraine with the Rhone and the Mediterranean. This very fact carries the suggestion that the region is not suitably built for political autonomy. Detailed examination of the structure confirms the conclusion. Holland, a small country, finds the basis of her political autonomy in the wide sea; Switzerland in her mountains. In Alsace-Lorraine is no physical feature making for such unity. Lorraine, geologically a dependence of the Paris Basin, with characteristic concentric zones here presenting great lithological variations in narrow space, is distinguished by marked "infirmity" of structure. Until the industrial penetration of the Vosges in recent times the sole link between Lorraine and Alsace was by the Col of Zabern: the countries turned their backs on one another. Even the Alsatian Plain between the two natural barriers of the Vosges and the Rhine—for the Rhine downstream to Strassburg has been a parter rather than a uniter of men—shows variations of soil and water conditions that have involved important modifications in human occupation. Where, then, belongs Alsace-Lorraine, torn between east and west? Certain arguments, ethnographic, linguistic, appropriate to the consideration of regions of less high development do not avail here. In human geography is found the justification of "France de l'Est," as unfolded in the region's development during the last two or three centuries, that is in modern times.

When the Peace of Westphalia (1648) gave France effectual sovereignty over these lands of her eastern border she found herself in control of a land-loving people of sturdy independence and real personality. Love of the soil was fundamental. In both Alsace with its naturally rich and varied resources and Lorraine with its more niggardly yet workable soil agriculture had reached a high degree of development. And love of the land was reinforced by democratic tendencies unusual for the time—themselves a heritage of the frontier. Here surely was need for delicate handling, and the need was recognized. France already showed signs of the assimilative power that was subsequently to make her great among colonizing nations. By slow degrees and natural channels only did the wise government of the Old Régime seek to bind the new territories. Language, religion, economic systems and privileges were respected. But one new element failed not to make an impression—French justice, "*justice égale.*" Thus, through a century and a half, was prepared the way for the event through which Alsace and Lorraine entered completely into French unity—the Revolution. And the Revolution that bound Alsace and Lorraine to France also emphasized their severance from Central Europe. When they saw the petty princelings and their feudal following take the road of Germany Alsace-Lorraine bade lasting farewell to spiritual domination from the region beyond the Rhine.

Nowhere did the Revolution find greater response than among the people of the East. It touched them in their most sensitive fiber, in their attachment to the soil. Its effects on the division of the land, the progress of agriculture, and the growth of the rural population are here seen at a maximum. Even during the wars of the Revolution and the Empire population exhibited no diminution, and with the establishment of peace in 1821 growth proceeded by leaps. Concomitant with it was a progress in industry which until the middle of the century was in close alliance with the agricultural advance. The divorce between agriculture and industry is first shown in the census figures for 1856. The ancient metallurgical industries of the Moselle, the long-established cotton industry of Mülhausen and the Vosgian valleys then began to enter on the modern industrial epoch. Highways of communication, canals and railroads, were built uniting Alsace and Lorraine

with each other and with the rest of France and with the Rhine. In the new economic adjustment of human relations, close organization and increased intercommunications, the two divisions for the first time in history formed a real unit.

This point needs emphasis: alone it makes clear the depth of injury wrought in 1871 by which the carefully built economic unity was destroyed. Yet the consequences were not entirely such as might have been anticipated. The remnant of eastern France left with but the crumbs of the metallurgical industries of Lorraine, with the weavers of the Vosges cut off from the Alsatian spinners, was not prostrated. Actually she gained by the misfortune of the lost provinces. A map of the gain and loss of population by canton in the frontier region since 1871 brings out a notable feature of this profit. The cantons of the western flank of the Vosges *en échelon* with Belfort have all gained in population, while those of the eastern flank have lost. Not individuals or families but whole groups of peoples removed themselves from Alsace and Lorraine to the departments immediately across the frontier, where, despite differences of dialect and customs, they found harmony of spirit. Probably it is no exaggeration to say that the exodus has accounted for 500,000 people, one-third of the population of 1866. Not for a quarter of a century, by aid of Prussian immigration and a mob of Italian and Polish laborers, was the deficit made up.

Perhaps the most remarkable feature of the mutilation was the impetus given to the iron-industry in French Lorraine. By discovery of the continuity of the ore deposits to the west, especially those of the Briey basin, and by admirable industrial organization France has here built up again an economic unit, curtailed though it may be by the political frontier across which mingle the smokes of the French and German foundries. And here appears a point of special interest. In this frontier region is mirrored the opposition of French and German aims; the French ideal of regional, and thus individual, development and the German ideal of hegemony. A comparison of population statistics for the cities of Metz and Nancy is instructive:

	1866	*1872*	*1881*	*1891*	*1901*	*1911*
Nancy	49,993	52,978	73,225	87,110	102,559	119,949
			1880	*1890*	*1900*	*1910*
Metz	54,817	51,332	53,171	60,186	58,462	68,598

It should further be borne in mind that a quarter of the population of Metz is military and official. In its geographical situation and its traditions Metz is eminently fitted to be a regional capital. Since 1871 the heavy hand of the German economist, subordinating Lorraine to the Westphalian coalfield, has stifled regional growth.

Strassburg alone of the large cities of Alsace-Lorraine shows a phenomenal growth since 1871, and this is dependent on the extraordinary development of the Rhine: it is another testimony to the ideal of German hegemony. The late improvement of the Rhine as a navigable waterway is the first stage in the development of a Central European route destined to be the master route of the continent. Enlightened nations have come to recognize the principle of free access for all to the great rivers and seas. German hegemony is subversive of this principle, which has so important a bearing on the great Rhine route. Before the war foreign flags already suffered serious handicap on the Rhine. By the restoration of France to the river the principle of free navigation would be safeguarded. Not only the complete development of France but also the harmony of world relations demand the re-establishment of France de l'Est.

ASIA

Japan's Growing Merchant Marine. According to the *Yokohama Chamber of Commerce Journal* for November, 1917 (p. 3), Japan will soon be building ships at the rate of 250 per year. This means an annual addition to her merchant marine of about 1,000,000 tons. Forty-two companies are engaged in the industry, with 113 slips already established and 24 more in course of construction. No figures are given as to the number of people employed, but an undertaking such as this must offer work for many thousands.

As an island people, with a dense population but a limited area for production, Japan, when she took her place among Western nations, recognized that hers would be the role of a maritime power. To maintain her economic independence she must have her own ships. Successful territorial or commercial expansion requires that maritime development keep pace with the acquisition of outlying possessions or foreign markets. The nation must keep in touch, too, with the many settlements which her over-populated islands send out into other lands.

Japan is favorably situated as a center of distribution in the Orient, but, otherwise,

her location far from the leading commercial countries, with the vast undeveloped Asiatic continent or the wide expanse of the Pacific interposed between her and the world's most active trade centers, means long journeys for her merchantmen and much time consumed in each voyage and, consequently, demands many ships for the traffic with Western nations.

A glance at the distribution of Japan's foreign trade reveals her need for a large merchant fleet. According to *Commerce Reports Supplement No. 55c* for December 31, 1917, the value of imports into Japan during 1916 was, in round numbers, $377,000,000 and that of exports was $562,000,000, giving a total foreign trade of nearly a billion dollars. (For the effect of the war on Japanese trade see the note in the January, 1918, *Review*, p. 77: Japan, the Commercial Focus of the Pacific.) A large part of this trade was with China, but much of it was carried on with countries far distant. For example, $40,000,000 worth of cotton and about $20,000,000 worth of iron manufactures had to be carried from the United States. Cotton valued at $4,000,000 was imported from Egypt. Dynamite worth nearly $1,000,000 came from Canada, England, and the United States. Peru, Sweden, Chile, France, and Italy figured also among the countries from which Japan imported. The distribution of exports, too, shows how far her merchants must fare in search of markets. Raw silk worth $112,000,000 was sent to the United States. The same material worth $16,000,000 went to France. The United Kingdom bought from Japan large shipments of peas, braids, copper ingots and slabs, husked rice, silk habutai, cotton underwear, etc. Japanese exports were in demand, also, in considerable quantities in Australia, British India, South Africa, Egypt, Italy, Denmark, Hawaii, Argentina, Norway, and Chile. Furthermore, Japan is becoming an important center of redistribution. Sugar from the Philippines and the Dutch East Indies was reshipped to China. Cotton from India, the United States, China, and Egypt was manufactured and exported to China, Australia, the Philippines, Cape Colony, Asiatic Russia, the United Kingdom, and many other countries. Clothing made from Australian wool was reshipped to China, India, France, England, and Russia.

The present employment of many ships for transporting troops, considerable losses to Allied tonnage, and the continued absence of German shipping from the seas offer Japan an unparalleled opportunity to build up a great merchant marine that will soon make her, in maritime commerce at least, the England of the Pacific.

MATHEMATICAL GEOGRAPHY

British Versus Metric Measures in Geographical Work. Is it desirable for the British Empire to adopt the metric system of weights and measures? To this question at the time under the consideration of the conjoint Board of Scientific Societies a geographical contribution was made by Arthur R. Hinks in a paper read before the Royal Geographical Society (British and Metric Measures in Geographical Work: Notes for Discussion, *Geogr. Journ.*, March, 1917). Naturally the geographer is most concerned with lineal measurements, in regard of which Mr. Hinks makes propositions summarized thus:

"All British maps should be provided with scales of horizontal distances both in miles and kilometers; heights and contours should as far as possible be in meters, both on land and in the sea. The representative fractions of all British maps should as far as possible be in round numbers.

"In work relating to countries which use the metric system and in statistics, results should be given in British and metric, or in metric alone, but not in British alone. The more technical the work, the more desirable is the use of the metric units. In British geodesy the metric system exclusively should be used for the future."

Emphasis is laid upon the need of a single standard for purposes of geodesy, where the greatest precision is demanded in regional comparisons, and for the construction of contoured maps, where transformation to the British unit cannot be made with exactitude, a fact clearly brought out in the work that has been done on the 1:1,000,000 map of Europe and the Near East which, compiled under the direction of the British General Staff, is being published by the Royal Geographical Society (see *Bull. Amer. Geogr. Soc.*, Vol. 47, 1915, pp. 776-777.

A New Chart for the Barometric Determination of Altitudes. The difficulties in connection with the accurate determination of altitudes by means of barometers are well known. There are the questions of transporting mercurial barometers; the errors of aneroids; the need of simultaneous observations of temperature and pressure at the upper elevation and at a lower station whose altitude is known; the effects of temperature, water vapor, latitude, etc. The allowance which must be made for varying temperatures is the most important.

In order to facilitate a quick and accurate determination of altitude, the pressure and the temperature being known, Professor Alexander McAdie of Blue Hill Observatory near Boston, Mass., has designed a neat and convenient chart. This is primarily intended for the use of aviators. It permits the rapid estimation of the altitude, taking account of necessary correction for the mean temperature of the air column. The chart is about 13½ by 8 inches in size. Four different temperature scales are given (at the left of the card), Fahrenheit, Centigrade, Absolute, and New (see *Geogr. Rev.*, Vol. 4, 1917, p. 215, Fig. 1). The range is from +90° to —22° Fahrenheit. Across the top of the sheet are the pressure scales (inches, millimeters, and kilobars), ranging from 30.00 inches at the left to 21.20 inches at the right. At the bottom are two altitude scales, in feet and meters. The range is from sea-level to 9,000 feet. The method of using this card is as follows: A rubber band is placed around the cardboard from left to right and is adjusted to the observed temperature. A second rubber band is placed around the cardboard from top to bottom in such a way that it runs from the observed pressure reading parallel to the nearest of several slanting broken lines. From the point of intersection of the two rubber bands, the vertical co-ordinate is followed to the bottom of the diagram, where the altitude, corrected for temperature, is read off. On the reverse of the chart there is a brief statement concerning the barometric determination of altitudes and an explanation of the use of the chart. R. DEC. WARD

PHYSICAL GEOGRAPHY

The Work of the Wind in Warming a Lake. The work of the wind is largely responsible for the annual warming of lakes below a depth of two or three meters, beyond which sunlight does not penetrate appreciably. Professor E. A. Birge has made a careful study of the amount of work required to give the observed temperatures of the different layers (*Trans. Wisconsin Acad. of Sc., Arts, and Letters*, Vol. 18, Pt. 2, August, 1916, pp. 341-391). The sun and wind effects are constantly in a conflict in which the former is uppermost in summer, but the latter in autumn. The more the sun warms the surface layers of a lake, the more difficult it is for the wind to produce currents of warm water downward against gravity. This is particularly the case for shallow or small lakes. For example, compare Lake Geneva with Green Lake, both in Wisconsin. They have about the same surface area and about the same summer heat income, 27,000 calories per square centimeter in 1913; but Lake Geneva at a depth of 20 meters has an area only 51 per cent of the surface while Green Lake has a corresponding 61 per cent. The 3,690 calories per square centimeter distributed in Lake Geneva below 20 meters required a minimum of 500.6 gram-centimeters of work, whereas Green Lake had 5,450 calories distributed at a cost of at least 476.5 gram-centimeters. This difference is due to the greater warming of the upper layers of the shallow lake, which makes the thermocline (at 7 to 11 meters) steeper, and so more resistant to down-currents, than that in a deep lake. The stronger the wind, the greater the resistance to a downward current becomes, for, as the warm water is piled up on the leeward side of the lake, it is forced down closer to the cold water. Professor Birge has likened the work of the wind on a lake to pressure on a spring: the more it is compressed, the harder it has to be pushed; and when the pressure is released there may be little or no permanent result. CHARLES F. BROOKS

Showers of Organic Matter. There are many cases on record of the occurrence of showers of organic and inorganic matter. Ancient as well as modern chronicles mention falls of insects, of small animals such as toads, of dust, of seeds, of fish. "Blood rain" has always caused superstitious fear among ignorant people. The whole subject is an interesting one, especially from a meteorological standpoint. The biologist also has a real interest in it because of the possibility of the transportation, in such "showers," of animal or plant life. A discussion of showers of organic matter by Waldo L. McAtee of the U. S. Bureau of Biological Survey brings together a large number of facts and is of more than usual popular interest (*Monthly Weather Rev.*, May, 1917, pp. 217-224). The author deals first with "spurious showers." In this group are included "manna rains." Manna consists of lichens of the genus *Lecanora*. In none of the recorded cases of such "rains" is there any direct evidence that the substance fell from the sky. These lichens, forming small round bodies, are easily blown over the earth's surface, accumulate readily in depressions, and are drifted into masses during the run-off of rain water. Manna "rains" occur only in regions where these lichens are common. "True showers" include red rains (dust) and showers of plants, invertebrates and vertebrates. The most interesting "showers" are those of frogs or toads and of fish. The author gives several historic examples of such occurrences and states that "there cannot be the slightest doubt that there are genuine phenomena of this character, though perhaps

not so numerous as the recorded instances." In regard to showers of fish, it is well known that waterspouts have been observed to empty fish ponds and scatter their occupants.

The author concludes that the spectacular showers of organic matter have little importance in the distribution of life. The animals are usually dead or soon die because they fall in an unfavorable environment. On the other hand, the distribution, by atmospheric movements, of minute eggs and spores is of great significance. Such bodies are adapted to survive transportation, and, being in large numbers and widely scattered, there is a good chance that some of them will survive. R. DeC. WARD

HUMAN GEOGRAPHY

Meteorology and Flying. It is inevitable that, with the remarkable increase in the number of aeronauts and aviators resulting from the war, more and more attention should be paid to the importance of meteorology in connection with flying. At critical times meteorological knowledge has time and again proved its practical value to those who navigate the air. And the men who fly will, in their turn, advance meteorological science by means of the facts which their own practical experience in the air will impress upon their minds. He who knows most about practical meteorology is the best equipped for service in the air. He is, therefore, the most likely, other things being equal, to do his country the greatest service.

Journals devoted to aeronautics and aviation, meteorological journals, and publications dealing with general science, have all published, within the last three years especially, numerous articles on meteorological subjects of interest to flyers. Two recent publications along this line are of special importance because they cover a rather wider field than do most of the earlier discussions and because they contain much of immediate practical use. The National Advisory Committee for Aeronautics has published (*Report No. 13*, 1917) a report on "Meteorology and Aeronautics," prepared by Professor W. R. Blair, a member of the Subcommittee on Relation of the Atmosphere to Aeronautics, in charge of the aerological investigations of the U. S. Weather Bureau. Professor Blair is now a Major in the Signal Corps, U. S. R. The purpose of the report "is to show the sort of atmospheric data available and to put the subject in such shape as may make it bear directly on the problems which are met in aviation." There are three parts. The first concerns the physical properties and dynamics of the atmosphere. The second is devoted to topographic and climatic factors in relation to aeronautics. The third deals with current meteorology and its use. Copies of this pamphlet may be secured from the National Advisory Committee for Aeronautics, Washington, D. C.

Another paper, by Professor R. DeC. Ward of Harvard University, entitled "Meteorology and War-Flying," appears in the *Monthly Weather Review* for December, 1917. This embodies, in highly condensed form, the substance of the lectures which the author has been giving at the U. S. Army School of Military Aeronautics at the Massachusetts Institute of Technology. The matter is presented in as simple and practical a way as possible. Details are omitted. The essential facts which the aviator needs to know are alone emphasized.

Meteorology has much to offer to those who fly, but, as Major Blair says in the introduction to his report, "just what information will be most useful to the aviator is a question that experience and possible development of aircraft must determine."

Increasing Commerce in Vegetable Oils. An article in the January, 1918, number of *The Americas* (pp. 22-27; published by the National City Bank of New York) calls attention to the world-wide search for oils.

Vegetable oils have become a very important item of commerce within the past decade. They are used for industrial purposes and, especially since the supply of animal fats has been so limited, for foodstuffs as well. Besides olives the principal sources of supply are cottonseed, coconut, the soya bean, cacao, peanuts, flaxseed, and the castor bean. Corn kernels, rape seed, and palm kernels also yield an increasingly important amount of oil. From most of these materials butter and salad oils are made which have largely taken the place of animal products in European countries and to a lesser extent in the United States. Holland now exports twice as much margarine as dairy butter. Consul T. D. Edwards, at Cornwall, Ont., reports that the manufacture of margarine is a promising industry in Canada (*Commerce Repts.*, Jan. 15, 1918).

The countries about the Mediterranean hold first place in the production of olive oil. Present demands have stimulated their output. The French olive crop for 1917 was estimated to be the largest in twenty years, sufficient to yield 8,000,000 gallons of edible oil and 65,000 metric tons of oil cake (*Commerce Repts.*, Dec. 22, 1917). The United States produces the greatest amount of cottonseed oil, but China, India, and Egypt provide

large quantities. Mexican ginning mills are now planning to utilize cottonseed for oil (*ibid.*, Jan. 10, 1918). The dried meat of the coconut, called copra in commerce, is used for the manufacture of coconut oil. The palm from which this is taken grows in India, the Straits Settlements, the Philippines, and other Pacific islands. Some of these island groups have received their first close contact with modern civilization through the recently established coconut plantations. The soya bean, a product of Manchuria, is exported in large quantities by Japanese concerns. The United States employs nearly 200,000 tons per year of the oil from this bean. The better grades are used in margarine, the poorer grades for industrial purposes, while the residue, made into large round cakes, serves as cattle feed or fertilizer. Peanut oil, shipped from China, Japan, West Africa, and India, is becoming more and more a staple oil for food. Our own Southern States produce large quantities of peanuts. Only recently, however, has the extraction of oil become an important industry there. Argentina, India, and Canada raise most of the flaxseed used in manufacturing paints, varnishes, linoleum, and soap. This oil seldom enters into food products. Since England conquered German East Africa its groves of wild oil-palms have materially added to her available sources of palm oil. She already held the greater part of the world's supply in her West African possessions. The castor bean, a native of Africa, now grows wild in many tropical lands. India produces more than any other country. Italy and California also make quantities of castor oil. As India's supply now goes solely to England, the United States has begun to import from Brazil, where, in the region of Pernambuco, the plant is found but has not been largely exploited.

Before the war most of the vegetable oils were extracted in crushing mills located far from the regions where the plants were grown, chiefly at Marseilles, at Harburg (near Hamburg), at Hull in England, and in several places in the United States. In the last few years, however, many local mills have been established near centers of production, and the oil itself has thus become the article of commerce.

GEOGRAPHICAL NEWS

Proposed Departure This Year of Amundsen's Polar Drift Expedition. Captain Roald Amundsen arrived in this country on March 16 for a stay of two or three weeks to purchase supplies for his proposed Polar drift. It will be recalled that he had originally planned it for 1910 (*Bull. Amer. Geogr. Soc.*, Vol. 40, 1908, p. 751, and Vol. 41, 1909, p. 702), but he later changed his plan and started in that year for the Antarctic on the expedition on which he reached the South Pole (*ibid.*, Vol. 43, 1911, p. 451). He then scheduled it for 1914 (*ibid.*, Vol. 45, 1913, p. 618), and the *Fram*, Nansen's old vessel, which had been refitted for the expedition, set sail in that year for Bering Strait via the Panama Canal. But slides interfered with the opening of the canal at the appointed time, and the consequent delay made it necessary to abandon the expedition for that year and postpone it to the next (*ibid.*, Vol. 46, 1914, pp. 532-533). But even this plan was made impossible by the changed conditions due to the beginning of the war. The expedition was then definitely arranged for 1918, and Captain Amundsen made a previous visit to this country in the winter of 1916-17 to secure supplies (*Geogr. Rev.*, Vol. 2, 1916, pp. 473-474).

As at present outlined Captain Amundsen's plan is to leave Norway in June or July and proceed east along the Siberian coast if possible as far as the De Long Islands (158° E.), otherwise as far as the New Siberian Islands (140° E.), and enter the pack there for the drift across the Polar basin to the point of emergence between Greenland and Spitzbergen. The earlier plan contemplated entering the Polar Basin through Bering Strait. The expedition will be equipped for seven years, although it is expected to last only four or five years. It will leave on a new vessel, the *Maude*, especially constructed by Amundsen himself with an egg-shaped hull to withstand ice-pressure. The *Maude* is a fore-and-aft schooner, equipped with 140-horsepower engines burning crude oil, giving a speed of 8 or 9 knots. She is of 900 tons register, 120 feet in length, 40 feet beam, and draws 12 feet of water (*New York Herald*, March 3, 1918; and *New York Times*, March 17, 1918).

Personal

Dr. H. M. Ami of the Geological Survey of Canada read a paper entitled "Notes on the Geology of Asia Minor" before the Geological Society of Washington on May 9, 1917. The general geological features were outlined with special reference to large undeveloped mineral resources.

Professor W. M. Davis gave an illustrated lecture before the Appalachian Mountain Club in Boston on March 27 entitled "The Geography of Northern France in Relation to the World War."

PROFESSOR LOUIS GENTIL of the University of Paris was awarded the Prix Delesse by the Paris Academy of Sciences on December 10, 1917, for his work on the geology and physical geography of northern Africa, particularly Morocco. Professor Gentil's work is summarized in his admirable "Le Maroc physique" (Paris, 1912).

M. HENRI JUMELLE, professor of botany at the University of Marseilles and Director of the Colonial Museum of that city, was awarded the Prix Gay of the Paris Academy of Sciences on December 10, 1917, for his work on the geographical distribution of tropical and sub-tropical plants of economic value.

On DR. J. SCOTT KELTIE, editor of the "Statesman's Year-Book" and for many years Secretary of the Royal Geographical Society of London, was conferred the honor of knighthood on the occasion of the annual distribution of New Year honors in Great Britain.

MR. W. T. LEE of the U. S. Geological Survey read a paper before the Geological Society of Washington on May 9, 1917, entitled "The Geology and Scenery of the Rocky Mountain National Park."

DR. H. H. RUSBY of New York read a paper before the Torrey Botanical Club on February 12 entitled "Botanical Exploration in Colombia."

M. FRANÇOIS SCHRADER, the geographer and cartographer, head of the map department of the publishing firm of Hachette et Cie. of Paris, has been giving a course on "The Geographic Causes of Affinity and Differentiation Among Human Groups; Evolution of the Old World" during the past winter at the Ecole d'Anthropologie de Paris.

DR. AUREL STEIN received an award from the Fondation Tchihatchef at the hands of the Paris Academy of Sciences on December 10, 1917, for the work of his three Central Asian expeditions (1900-01, 1906-08, 1913-16).

DR. STEPHEN S. VISHER of the Department of Geography of the State Normal School at Moorhead, Minnesota, has been appointed a land classifier in the U. S. Geological Survey. The Survey's Land-Classification Board is engaged on the classification of more than 20,000,000 acres of arid land situated in the western part of the United States.

OBITUARY

DR. ROLLIN A. HARRIS, tidal expert of the U. S. Coast and Geodetic Survey, died suddenly on January 20 at the age of 55. His major work is a "Manual of Tides," a monumental treatment of the subject which appeared as Appendices to the *Annual Reports of the U. S. Coast and Geodetic Survey*, as follows: Part I, Introduction and Historical Treatment of the Subject, 150 pp., App. 8, *Rept. for 1897;* Part II, Tidal Observation, Equilibrium Theory, and Harmonic Analysis, 147 pp., App. 9, *Rept. for 1897;* Part III, Some Connections between Harmonic and Nonharmonic Quantities, Including Applications to the Reduction and Prediction of Tides, 137 pp., App. 7, *Rept. for 1894;* Part IVa, Outlines of Tidal Theory, 165 pp., App. 7, *Rept. for 1900*; Part IV B, Cotidal Lines for the World, 85 pp., App. 5, *Rept. for 1904;* Part V, Currents, Shallow-water Tides, Meteorological Tides, and Miscellaneous Matters, 315 pp., App. 6, *Rept. for 1907*. For an estimate of Harris' tidal theory as developed in this manual see Krümmel's "Handbuch der Ozeanographie," 2nd edit., Vol. 2, pp. 254-258, 1911, and Poincaré's "Mécanique Céleste." To geographers Dr. Harris was possibly best known for his advocacy, on the basis of tidal observations, of the existence of a land mass northwest of the American Arctic Archipelago ("Arctic Tides," 103 pp., U. S. Coast and Geodetic Survey, Washington, 1916). Nansen has recently taken exception to the arguments on which this view was based ("Spitsbergen Waters," Art. 2 in *Kristiania Videnskapsselskapets Skrifter: Mat. Naturv. Klasse, 1915;* see especially section on "The Extension and Shape of the North Polar Basin," pp. 92-98); and the recent advances into the unknown made by the MacMillan and Stefansson expeditions (see the March *Review*, pp. 238-241, with map), the plan of the latter of which was partly based on Harris' theory, would seem to show that at any rate no land exists as near to the known coasts as assumed by him.

GEOGRAPHICAL PUBLICATIONS

(Reviews and Titles of Books, Papers, and Maps)

For key to classification see "Explanatory Note" in Vol. II, pp. 77-81

NORTH AMERICA

General

DIXON, R. B. **The early migrations of the Indians of New England and the Maritime Provinces.** 14 pp. Reprinted from *Proc. Amer. Antiquarian Soc.*, April, 1914. Worcester, Mass., 1914.

From a study of languages combined with the scanty records of shell heaps and graves Professor Dixon reads the story of the movements of the aborigines of the Northeast. With one possible exception all belonged to the Algonquin linguistic stock, whereas to the west of the region described, in New York and Ontario, the Iroquois were found. In a study of the archeological evidence a contrast was found between the remains west of the Maine-New Hampshire boundary line and those to the east of it. In the former there appears to have been a greater development of village life and more extensive use of agriculture; in the latter, including the Maritime Provinces of Canada, there is little evidence of a settled village life or of agriculture. On the basis of language a similar division is found. The more eastern of these groups is divided into two: the Micmac and the Abnaki, which were somewhat closely related. To the west two other groups are found: one formed by the Massachusetts tribes as far west as and including the Connecticut Valley, together with the tribes of eastern Connecticut, Rhode Island, and eastern Long Island; the other including the tribes of western Massachusetts and Connecticut and the Hudson Valley southward through New Jersey and Pennsylvania into Delaware. A study of the languages of these tribes shows the closest relationship to have been with the central Algonquins of the Ohio Valley.

Combining this evidence with that afforded by the mythology and culture of these tribes, Professor Dixon arrives at the conclusion that the distribution of tribes in New England was the result of a series of migrations. The latest comers, the Lenape of the Ohio Valley, arrived in southwestern New England at about the end of the fifteenth century, pushing the earlier settlers, also from the Ohio Valley, farther to the east. On the other hand the Micmac and Abnaki of the northeast evidently had a different origin. Just what this was cannot be fully known with the present lack of knowledge concerning the archeology of the middle and lower St. Lawrence Valley. It is thought that the Micmac, with possibly the Abnaki to the east, may have once occupied a large part of the St. Lawrence Valley and from there been driven forward by the encroaching Iroquois. This association accounts for mythological similarities between the Micmac and the Iroquois and for the presence of certain peculiar cultural objects, also for the lack of these in the Abnaki farther east who were not in contact with the Iroquois.

R. H. JONES

—— **Douglas, David, Journal kept by, during his travels in North America, 1823-1827, together with a particular description of thirty-three species of American oaks and eighteen species of pinus, with appendices containing a list of the plants introduced by Douglas and an account of his death in 1834.** Published under the direction of the Royal Horticultural Society. 364 pp.; ills., index. William Wesley & Son, London, 1914. £1, 1s. 10 x 6½.

The name of David Douglas is inseparably linked with the botany of the Pacific Northwest. It can safely be said that no botanical explorer has contributed more to our knowledge of the flora of this region than he. Born in 1798 and meeting an untimely end in 1834, the results achieved by this young pioneer during his brief career almost surpass belief. Some idea as to the extent of his work is suggested by the fact that of the plants catalogued in Piper's "Flora of the State of Washington" (*Contr. U. S. Natl. Herbarium*, Vol. 11), over two hundred and fifty species, by rough count, are noted as having been first collected by Douglas. Of these, more than a hundred retain the specific name first applied by him, while upwards of twenty bear the specific name of "*Douglasii*."

The present volume presents in full the journal kept by Douglas during his travels in North America from 1823 to 1827, together with several other hitherto unpublished manu-

scripts and various facts relating to his life, works, and death. Sent out in the interests of the London Horticultural Society, in 1823 he traveled through parts of New York, New Jersey, and Pennsylvania, but this first journey was not productive of results of any particular scientific value. On a second journey (1824-1827) he explored the larger part of what is now the state of Washington, together with much of Oregon and Idaho. From here he returned to England by way of Hudson Bay, traveling up the Columbia, crossing through Athabasca Pass, and thence down the Saskatchewan to York Factory. It was on this overland trip that, in naming the two mountains which flank Athabasca Pass, Mounts Brown and Hooker, he accredited them with elevations of approximately 17,000 feet (p. 72). This led to their being counted among the highest peaks in North America, a misconception which was only definitely cleared up by A. P. Coleman's expedition in 1893 (The Canadian Rockies: New and Old Trails, pp. 206-208). On a third journey (1831-1833) Douglas extended his field of investigations to California, carried out further explorations in the Northwest, and later sailed for the Hawaiian Islands, where he met a tragic death on July 12, 1834.

GEORGE E. NICHOLS

ALMAGIÀ, ROBERTO. **Nuovi studi sui viaggi dei Normanni nell'Atlantico settentrionale e in America.** *Riv. Geogr. Italiana*, Vol. 24, 1917, No. 5, pp. 200-205.

GERMAIN, LOUIS. **L'origine et la distribution géographique des faunes d'eau douce dans l'Amérique du Nord.** Map. *Ann. de Géogr.*, No. 132, Vol. 23-24, 1915, pp. 394-406.

KELLOGG, L. P., edit. **Early narratives of the Northwest, 1634-1699.** xiv and 382 pp.; maps, index. Charles Scribner's Sons, New York, 1917. $2.50. 9 x 6.

KROEBER, A. L. **The tribes of the Pacific coast of North America.** *Proc. Nineteenth Internatl. Congress of Americanists held at Washington, Dec. 27-31, 1915*, pp. 385-401. [Smithsonian Institution,] Washington, D. C., 1917.

MATHER, K. F. **The Champlain Sea in the Lake Ontario basin.** Maps, ills. *Journ. of Geol.*, Vol. 25, 1917, No. 6, pp. 542-554.

SAPIR, E. **Time perspective in aboriginal American culture: A study in method.** ii and 87 and vii pp. *Geol. Survey of Canada Memoir 90: Anthropol. Ser. No. 13.* Ottawa, 1916. [Geographical distribution of cultures and culture elements is one of the most powerful lines of evidence.]

UNITED STATES

Western States

KENNAN, GEORGE. **The Salton Sea: An account of Harriman's fight with the Colorado River.** 106 pp.; maps, ills. The Macmillan Co., New York, 1917. $1.00. 8½ x 5½.

The Cahuilla Basin, wrongly called the "Salton Sink" by Mr. Kennan and other writers, is in the form of the bowl of a large spoon, with the tip ending in the delta of the Colorado River, while the handle would be attached to the bowl near San Gorgonio Pass. Inveterate optimism in the settlement of the southernmost portion of the basin, not adequately provided with irrigation facilities, led to premature demands for water in 1901-1904. Desperate chances were taken with a wayward, silt-laden river flowing through deep alluvium. It must have seemed urgent to the engineers to furnish water to the settlers on the small area of land occupied previous to 1914, but, in view of later happenings, the refusal to do so would have been a justifiable sacrifice. The chief part in the colossal task of bringing the river under control naturally fell to the largest and most powerful organization in the region—the Southern Pacific Railway. Transportation, material, and labor were drawn upon without stint, and undaunted perseverance was displayed in making plans to meet new and unexpected engineering contingencies. The formation of the Salton Sea, with its area of about 450 square miles in one of the most arid regions in America, made a splendid opportunity to study the formation of aquatic conditions in the desert, and the gradual return to arid conditions marked by successive changes in the vegetation (A Decade of the Salton Sea, *Geogr. Rev.*, Vol. 3, 1917, pp. 457-473). The series of reorganizations and transfers by which the Southern Pacific acquired control of the land and irrigation company under whose régime the crisis came was so close and complicated that the limit of responsibility is not easily discernible. It is therefore not surprising that members of Congress, unaccustomed to altruism and familiar with the exorbitant demands and obliquity of procedure on the part of claimants, should fail to rise to the occasion and to pass measures to reimburse the Southern Pacific for an expenditure of money and effort in excess of its responsibilities.

D. T. MACDOUGAL

GUINN, J. M. **The passing of the rancho.** *Ann. Publs. Hist. Soc. of Southern California*, Vol. 10, 1915-16, Parts 1-2, pp. 46-53. Los Angeles. [A comment on the decline of the cattle industry in Southern California in relation to the rise in land values and to the years of drought. For nearly half a century the great commercial industry of Southern California had been the raising of cattle, first for their hides and tallow for export and later to supply beef to the miners in the gold fields. The industry required that the land devoted to it be held in large tracts called "ranchos." In the two years, 1863 and 1864, the rainfall was so slight that it was impossible to secure forage afield. It is asserted that a million cattle and horses starved to death. The rancheros were without money with which to restock the ranges or to cultivate them. Thus dawned the day of the small landholder and of rapidly increasing land values. The author describes several large ranchos and the manner in which each was split up into small holdings which could be irrigated for intensive agriculture.]

HICKS, W. B. **Evaporation of brine from Searles Lake, California.** 8 pp.; diagrs. *U. S. Geol. Survey Professional Paper 98A.* Washington, 1916. [A continuation of the experiments working toward a solution for the economical production of potash salts from the brine of the lake. See "Potash Resources of the United States" in the March, 1916, *Review*, Vol. 1, p. 217.]

JARDINE, J. T., AND L. C. HURTT. **Increased cattle production on Southwestern ranges.** 32 pp.; map, diagr., ills., bibliogr. *U. S. Dept. of Agric. Bull. No. 588* (Contribution from the Forest Service). Washington, D. C., 1917.

KEYES, C. R. **Orographic origin of ancient Lake Bonneville.** *Bull. Geol. Soc. of America*, Vol. 28, 1917, No. 2, pp. 351-374. ["Instead of a genesis due to conditions of moister climate induced by a glacial epoch, the facts gathered seem to point not only to a pre-glacial date of the lake's birth, but to a diastrophic rather than a climatic cause for its existence." See also the note on pp. 326-327, above.]

KROEBER, A. L. **California place names of Indian origin.** *Univ. of California Publs. in Amer. Archaeology and Ethnology*, Vol. 12, 1916, No. 2, pp. 31-69.

LECHNER, H. J. **Some geographic influences of eastern Washington in relation to agriculture.** *Journ. of Geogr.*, Vol. 14, 1915-16, No. 9, pp. 362-364.

MCARTHUR, L. A. **Geographical progress in the Pacific Northwest.** *Mazama*, Vol. 5, 1916, No. 1, pp. 94-95.

—— **National Parks portfolio.** [Nine pamphlets of views, with four pages of introductory text, as follows:] (1) Yellowstone National Park, 31 views; (2) Yosemite National Park, 28 views; (3) Sequoia National Park, 27 views; (4) Mount Rainier National Park, 24 views; (5) Crater Lake National Park, 2 diagrs., 23 views; (6) Mesa Verde National Park, 27 views; Glacier National Park, 25 views; (7) Rocky Mountain National Park, 29 views; and (8) Grand Canyon National Monument, 24 views. Department of the Interior, Washington, D. C., 1916. [This panorama of remarkable photographs of some of the most remarkable scenery of the North American continent is well designed to fulfil its aim—the focussing of public attention on the great National Parks.]

PALMER, A. H. **An eruption of Lassen Peak.** Bibliogr. *Monthly Weather Rev.*, Vol. 44, 1916, No. 10, pp. 571-573.

PALMER, A. H. **California earthquakes during 1916.** Map. *Bull. Seismological Soc. of America*, Vol. 7, 1917, No. 1, pp. 1-17.

PARSONS, E. C. **Notes on Zuñi. Part I.** *Memoirs Amer. Anthropol. Assoc.*, Vol. 4, 1917, No. 3, pp. 151-225.

PERNOT, J. F. **Forests of Crater Lake National Park.** 38 pp.; ills., index. Dept. of the Interior, Washington, D. C., 1916. [See comment on G. F. Allen's "The Forests of Mount Rainier National Park," *Review*, Vol. 2, p. 386.]

SOUTH AMERICA

GENERAL

ROSS, E. A. **South of Panama.** xvi and 396 pp.; map, ills., index. The Century Company, New York, 1915. $2.40. 8½ x 6.

This is one of the best books in English on the *people* of South America, especially as regards the first five chapters, Western Colombia and Ecuador, Peru, The Native Races, Chile, and Argentina. The last two thirds of the book, containing all sorts of summings up, has much of great interest, but also much repetition of earlier statements.

The author is not giving tourist impressions. He has no inclination to regard as bad or unprogressive all variations from his home habits. He is a trained observer, able to discern and to tell the truth. He shows what North America has, almost universally, to learn from Latin America in good manners. The utter lack of male morality in sexual affairs is suggested as the reason for the "fuzziness" often noted in Latin-American male minds, especially as it dates from the teens of practically the whole male population. At the same time the writer recognizes the high accomplishments of the small body of "intellectuals." Education is mostly at a fearfully low stage. The best work of the Protestants is not their missions but their schools. In Bolivin, for instance, they are the only good schools available and are bound to have a solid effect on the next generation, while the religious mission is of slight value. Good American women are said to be attempting the conversion of Bolivian Indians while they are themselves ignorant of both Spanish and Aymará!

Climate, race, and social history are indicated as causing the chief defects of Latin-American character. Had our forbears happened into the same environment as the Conquistadores, we should show today the same ineffectiveness. Argentina he sets apart as a "white man's country" in all respects and more likely to grow into closer resemblance to the United States, without any recognition of its lack of equivalent for our resources of coal, iron, lumber, copper, and petroleum, which must forever hinder Argentine industrial development. It would not be fair to reproach the sociologist author with his neglect of the geographic environment, but the neglect is complete, except for the broad recognition of tropical climate as conducive to sexuality. What the author set out to give was a picture of the people, and he has given an excellent one.

MARK JEFFERSON

PRATT, E. E. **Trade conditions in Latin America as affected by the European War.** 26 pp. Reprinted from *Annals Amer. Acad. of Polit. and Soc. Sci.*, Vol. 60 (*Publ. No. 902*). Philadelphia, July, 1915.

ROORBACH, G. B. **Problems in the development of United States-South American trade.** Reprinted from *Univ. of Pennsylvania Public Lectures 1916-17*, pp. 407-426. [The paper calls attention to certain little-recognized geographical difficulties in the way of commercial intercourse between the United States and South America. In particular it is pointed out that the commercially developed parts of South America (Southern Brazil, Uruguay, and Argentina) are as accessible to Europe as to the United States, while the approximation of this region and the United States in the character of production is a bar to the reciprocal exchange that is the basis of trade. See also the abstract of this paper in the *Scottish Geogr. Mag.*, Dec., 1917.]

SAFFORD, W. E. **Food-plants and textiles of ancient America.** Ills. *Proc. Nineteenth Internatl. Congress of Americanists held at Washington, Dec. 27-31, 1915*, pp. 12-30. [Smithsonian Institution,] Washington, D. C., 1917. ["This paper is intended to call attention to the principal food-plants, textiles, and other useful plants which the Americas have given to the world."]

STUNTZ, H. C. **South American neighbors.** x and 217 pp.; map, ills., bibliogr., index. Missionary Education Movement of the United States and Canada, New York, 1916. 60 cents. 8 x 5.

ULE, E. **Die Kautschukpflanzen Südamerikas.** 19 pp.; ills. (Vegetationsbilder, Ser. 12, No. 6. Herausgegeben von G. Karsten and H. Schenck.) Gustav Fischer, Jena, 1914.

EUROPE

RUSSIA

LEYST, ERNST. **Meteorologische Beobachtungen in Moskau im Jahre 1911**, 48 pp.; **im Jahre 1912**, 43 pp.; **im Jahre 1913**, 49 pp.; **im Jahre 1914**, 49 pp. Reprinted from *Bull. Soc. Imp. des Naturalistes de Moscou*, 1912-14.

A new series of meteorological observations was begun at the University of Moscow in November, 1892. Since then the work has been carried on without essential change, except that the scope has been gradually extended. The scope of the work is unusually broad, including, for example, observations of soil temperatures, earthquakes, magnetism and atmospheric electricity, as well as radio-activity of the atmosphere, ground air, and ground water. The latter series of observations was undertaken at irregular times, mainly in order to provide practical work for students. The annual results for 1911-1914 are discussed by Professor Ernst Leyst in the publications now before us. Twenty years of observations, in the new series, were completed in 1912. In 1913 a new Fuess colori-

meter, for determining the color of the sky, was added to the instrumental equipment. The close proximity of the electric street cars necessitated, in the same year, a discontinuance of observations of magnetic variation. A new and useful feature of the annual summary for 1914 is a brief résumé of the general characteristics of the year.

R. DEC. WARD

SAROLEA, CHARLES. **Great Russia: Her achievement and promise.** xi and 252 pp.; maps. Alfred A. Knopf, New York, 1916. 7½ x 5.

Dr. Sarolea's little book on Russia is a very valuable addition to the recent publications on this subject. It is compact but comprehensible. In a series of terse, vivid chapters he covers a great many subjects, from the geographical foundations of the history of the Russians and their ideals of life to the literary expression of these ideals and lastly the burning questions of Russian politics.

Particular stress is laid on the influence of geographical conditions on the historical, economic, racial, and political problems of Russia. This point is argued more logically, consistently, and convincingly by Dr. Sarolea than by any previous writer. First he points out that the great Russian plain, extending for 6,000 miles from the western to the eastern limits of the country, determined the course of Russian history. If lack of natural barriers made for democracy, as is shown in many historic Russian institutions, at the same time it was bound to bring into existence a strongly centralized and militarized government to hold the plain against incursions and under a unity of rule. The tremendous distances, too, the lack of communication due to sparse population, and the harsh climate have more to do with hindering the political and intellectual development of the country than any government. In economic life as well, geographical conditions are so important that in spite of its prodigious mineral wealth Russia will always remain primarily an agricultural country. As for the forty-eight races gathered within the long frontiers of the Empire, it has been only through a strong central government that they have been kept at peace among themselves.

Lastly Dr. Sarolea explains the geographical orientation of Russian foreign politics, the "heliotropic" instinct which turned this northern people eastwards and southwards along the trend of their great river—he makes a striking picture of this endless march to the open sea. Altogether this book throws a new and clear light on Russia and will do much to direct the study of that country along normal and useful channels.

BLAKE, R. E. **The Russian village and the war.** *Scientific Monthly*, Vol. 4, 1917, No. 6, pp. 544-547.

DURAND, C. **Le marché intérieur de la Russie.** *L'Économiste Français*, 44th Year, 1916, Vol. 1, No. 18, pp. 580-582.

HIMNER, M. **Contribution à l'étude de la Podolie russe: Les méandres encaissés et les conditions du peuplement.** Ill. *Ann. de Géogr.*, No. 134, Vol. 25, 1916, pp. 116-123.

—— **Houille blanche, La, et la houille grise en Russie.** Maps. *Rev. gén. des Sci.*, Vol. 26, 1915, No. 12, pp. 374-380.

—— **Kara Sea route, The: Mr. Lied's fifth Enisei expedition.** *London Times Russian Section*, No. 27, 1916, Dec. 30, p. 10. [See the February, 1917, *Review*, Vol. 3, pp. 151-152.]

M—, ANT. **Le long du littoral de la Mer Noire.** *Recueil publié à l'occasion du vingt-cinquième anniversaire du Club Alpin de Crimée et du Caucase*, pp. 68-76. Odessa, 1915. [In Russian.]

RABOT, CHARLES. **La houille blanche en Russie.** Diagr., ills. *La Nature*, No. 2270, 1917, March 31, pp. 199-203. [Abstracted in the July, 1917, *Review*, Vol. 4, p. 61.]

—— **Russia's new oil fields.** Map, ills. *Russia*, Vol. 1, 1916, No. 3, pp. 17-22. Martens & Co., New York. [Oil resources and prospects of the Ural Province. Oil locations are shown in a map reproduced from the *Journal of Petroleum Technology*.]

URQUHART, LESLIE. **The economic development of Russia and Britain's interest therein.** Map. *Journ. Royal Soc. of Arts*, No. 3340, Vol. 65, 1916, pp. 23-37 (discussion, pp. 35-37).

ITALY

BÉGUINOT, AUGUSTO. **L'ipotesi dell' "Adria" nei rapporti con la corologia delle piante e degli animali: Nota critica e programma di ricerche.** *La Geografia*, Vol. 5, 1917, No. 5-6, pp. 188-207. Novara.

BÉNÉVENT, E. **La plaine du Pô: Étude de géographie humaine d'après le livre de M. Arrigo Lorenzi.** Map. *Recueil des Trav. de l'Inst. de Géogr. Alpine*, Vol. 4, 1916, No. 2, pp. 189-236. Grenoble. [Abstracted in the February *Review*, pp. 147-148.]

DE GASPERI, G. B. **Grotte e voragini del Friuli (Materiali per lo studio dei fenomeni carsici, II).** Maps, diagrs., ills., bibliogr. *Memorie Geogr.* (Suppl. to *Riv. Geogr. Italiana*) *No. 30* (=Vol. 10, pp. 1-219). Florence, 1916.

GIORGI, COSIMO DE. **Distribuzione delle piogge nella provincia di Lecce (Terra d'Otranto).** Map. *La Geografia*, Vol. 5, 1917, No. 5-6, pp. 210-212. Novara.

HUNTINGTON, ELLSWORTH. **Climatic change and agricultural exhaustion as elements in the fall of Rome.** *Quart. Journ. of Economics*, Vol. 31, 1917, No. 2, pp. 173-208. [Abstracted in the May, 1917, *Review*, Vol. 3, pp. 401-402.]

ISSEL, ARTURO. **Cenni intorno ai termini geografici dialettali della regione ligure.** Bibliogr. *Boll. Reale Soc. Geogr. Italiana*, Vol. 6, 1917, No. 7-8, pp. 487-508. Rome.

—— **Italia, Censimento della popolazione del regno d', al 10 giugno 1911. Vol. III: L'alfabetismo della popolazione presente.** v and 230 pp. **Vol. IV: Popolazione presente, di età superiore a dieci anni, classificata per sesso e per professione o condizione.** vi and 553 pp. **Vol. V: Popolazione presente, di età superiore a dieci anni, classificata per sesso, età e professione o condizione.** vi and 363 pp. **Vol. VI: Popolazione presente classificata secondo la religione—Popolazione presente classificata secondo il luogo di nascita—Proprietari di beni immobili—Ciechi—Sordomuti—Popolazione presente di età superiore a novanta anni—Stranieri—Famiglie—Convivenze non familiari.** xi and 487 pp. **Vol. VII: Relazione.** viii and 265 and 467 pp. Direzione Generale della Statistica e del Lavoro, Ufficio del Censimento, Ministero per l'Industria, il Commercio e il Lavoro, Rome, 1916.

LORENZI, ARRIGO. **Di alcuni supposti toponimi slavi della provincia di Udine e ancora del manualetto di topolessigrafia della Venezia Giulia.** *Riv. Geogr. Italiana*, Vol. 24, 1917, No. 5, pp. 187-200.

MARANELLI, CARLO. **Dizionario geografico dell'alto Adige, del Trentino, della Venezia Giulia e della Dalmazia.** viii and 214 pp. Gius. Laterza & Figli, Bari, 1915. L.3.50. 9½ x 6½.

MARINELLI, O. **La geografia in Italia.** *Riv. Geogr. Italiana*, Vol. 23, 1916, No. 1, pp. 1-24; **Appendici**, No. 2-3, pp. 113-131.

MOCHI, ALDOBRANDINO. **Aspetti e periodi del Neolitico nell' Italia continentale e peninsulare.** *Archivio per l'Antropologia e la Etnologia*, Vol. 45, 1915, No. 3-4, pp. 241-291. Florence.

PEDRAZZI, ORAZIO. **L'alto Adige e i Tedeschi.** *Boll. Reale Soc. Geogr. Italiana*, Vol. 6, 1917, No. 7-8, pp. 538-550. Rome.

PRELLER, C. S. DU RICHE. **The "Pietre Verdi" of the Piémontese Alps. The crystalline rock areas of the Piémontese Alps.** Maps, diagrs. *Geological Mag.*, Decade 6, Vol. 3, 1916, No. 4, pp. 156-163; No. 5, pp. 198-205; No. 6, pp. 250-255; No. 7, pp. 304-313; No. 8, pp. 348-355.

PRINA, DEMOCRITO. **Le Alpi Giulie.** Maps, diagrs., ills. *Riv. Mensile del Club Alpino Italiano*, Vol. 36, 1917, No. 5-6-7, pp. 96-114.

ROLETTO, G. B. **La valle dell'Orsigna.** *Riv. Geogr. Italiana*, Vol. 23, 1916, No. 10, pp. 432-440; Vol. 24, 1917, No. 1-2, pp. 24-38. [An alpine valley in the Etruscan Apennines.]

RÖSSLER, JOSEF. **Der Gardasee.** 20 pp.; map, diagrs. (Suppl. to Schaffende Arbeit und Kunst in der Schule, No. 18.) A. Haase, Prague, [1915].

SACCO, FEDERICO. **L'esogenia quaternaria nel gruppo dell'Argentera (Alpi Marittime).** 48 pp.; map. Reprint from *Giornale de Geol. Pratica*, Vol. 9, 1911, No. 5-6. Parma. [Describes the work of Quaternary erosion.]

—— **Sesia, L'alta Valle del, ed il Monte Rosa: Guida illustrata di Alagna, Riva-Valdobbia, Valle Vogna.** 108 pp.; maps, ills. G. Zanfa, Varallo. L.1. 7 x 4½.

SIMKHOVITCH, V. G. **Rome's fall reconsidered.** Reprinted from *Political Sci. Quart.*, Vol. 31, 1916, No. 2, pp. 201-243. [Abstracted in the November, 1916, *Review*, Vol. 2, p. 376.]

SZABÓ, L. **Das geschichtliche Schicksal der östlichen Adria-Küste.** Bibliogr. *A Tenger*, Vol. 6, 1916, No. 2, pp. 60-69. Budapest. [In Hungarian.]

AFRICA

East Africa

Le Pointe, Henri. **La colonisation française au pays des Somalis.** 98 pp.; map, ills. Jouve & Cie., Paris, n. d. 2 fr. 50. 10 x 6½.

This is a careful study of one of the lesser known parts of Africa. As the author shows, French Somaliland is, for the most part, a barren, rocky waste, but its situation gives it importance. It stands where the Red Sea merges with the Indian Ocean. Jibuti, its capital and chief port, is on the southern shore of the Gulf of Tajura. It is a deep-water harbor and supplies with coal, water, ice, meat, and vegetables many vessels in the trade with China, Japan, India, the Persian Gulf, and the important islands of the Indian Ocean. The French first chose Obock, on the north side of the gulf, as the capital and port of the colony, but finding its harbor shallow and its climate trying they abandoned it for the more commodious, salubrious, and deep-water port of Jibuti. The great advantage of the port is that it is the best starting point for the rich region of central and southern Abyssinia and for Harrar, a thriving Abyssinian town of 40,000 people, surrounded far and wide by plantations of coffee, cotton, sugar cane, and oranges. The railroad has been extended to Harrar, 185 miles from Jibuti, but has not yet reached Adis Abeba, the capital of Abyssinia, where the road will tap the trade of a large part of that rich country.

Before the war, three trains a week were making the round trip between Jibuti and Harrar carrying merchandise, much of which was sent on by caravan to Adis Abeba. The native population of French Somaliland consists of Arabs, Danakils, Somalis, and Abyssinians. The book is a timely compilation. The gist of it is that the rock plains of French Somaliland are economically worth little but offer the most convenient route to the vast and rich area of southern Abyssinia. Cyrus C. Adams

Carl, J. **Autour du Victoria Nyanza: Souvenirs de voyage en Afrique.** *Le Globe*, Vol. 55, 1916, pp. 29-52. Soc. de Géogr. de Genève.

Dempwolff, Otto. **Die Sandawe: Linguistisches und ethnographisches Material aus Deutsch-Ostafrika.** Diagrs., ills. *Abhandl. des Hamburgischen Kolonialinstituts*, Vol. 34 (Reihe B; Völkerkunde, Kulturgesch. und Sprachen, Vol. 19), pp. 1-180. Hamburg, 1916.

Giuffrida-Ruggeri, V. **Nuovi studi sull'antropologia dell'Africa orientale: Etnologia e antropometria dell popolazione Eritreo-Somale-Abissine e delle regioni vicine.** Map, ills. Reprint from *Archivio per l'Antropologia e la Etnologia*, Vol. 45, 1915, No. 2, pp. 1-59. Florence.

Lyons, H. G. **German East Africa.** Map, diagrs., ills. *Quart. Journ. Royal Meteorol. Soc.*, No. 182, Vol. 43, 1917, pp. 175-194. [Abstracted in the January *Review*, pp. 75-76.]

Mori, Attilio. **I risultati geografici di una missione scientifica in Somalia.** *Riv. Geogr. Italiana*, Vol. 23, 1916, No. 10, pp. 446-454.

WORLD AS A WHOLE AND LARGER PARTS

Spinden, H. J. **The invention and spread of agriculture in America.** Map, ills. *Amer. Museum Journ.*, Vol. 17, 1917, No. 3, pp. 181-188.

Opinion today generally favors the independent origin of agriculture in the eastern and western hemispheres. In the western hemisphere, while agriculture may have arisen at more than one center, it is believed with some justification that Mexico and Central America constitute the single cradle region. The nearest wild relative of the cultivated maize plant is the "sacred maize" of the Aztecs. Maize with beans and squashes is common to all the cultivated areas of the Americas. The course of agricultural development is, however, to be traced by archeological rather than by botanical data. Associated with it is pottery manufacture, essentially the art of a stationary—and hence in general an agricultural—people. The sequence of pottery styles forms an indication of the sequence of agriculture. In the above article the relation between the two arts is illustrated by a map showing the pre-Columbian distribution in the Americas. The northern limit of pottery runs from southern California to the Gulf of St. Lawrence: the southern limit from south-central Chile (40° S.) to the Golfo de San Jorge, Argentina. On the west side of the continent, where the ceramic art is oldest, these limits roughly coincide with the areas of oldest agricultural development, that is in the arid highlands where irrigation is necessary. The eastern portion of the northern limit of pottery coincides with another and later type of agriculture, that under favorable temperate conditions. In the southern hemisphere the area under such agriculture was much more

limited, and pottery is distributed a good deal south of it. Within the tropics on the forested and humid lowlands a third type of agriculture is to be found.

SMITH, G. E. **On the significance of the geographical distribution of the practice of mummification: A study of the migrations of peoples and the spread of certain customs and beliefs.** 143 pp.; maps, bibliogr. Reprinted from *Memoirs and Proc. Manchester Literary and Philos. Soc., 1914-1915*, Vol. 59, Part II. The Manchester Press, Manchester, 1915. 2s. 6d. 8½ x 5½. [See the July, 1917, *Review*, Vol. 4, pp. 63-64.]

SPEER, R. E. **The unity of the Americas: A discussion of the political, commercial, educational, and religious relationships of Anglo-America and Latin America.** v and 115 pp. Layman's Missionary Movement, New York, 1916. 7 x 4½.

SPINDEN, H. J. **The origin and distribution of agriculture in America.** Maps. *Proc. Nineteenth Internatl. Congress of Americanists held at Washington, Dec. 27-31, 1915*, pp. 269-276. [Smithsonian Institution,] Washington, D. C., 1917.

VIVIER DE STREEL, E. DU. **Le rôle de nos colonies dans l'après-guerre.** 38 pp. Augustin Challamel, Paris, 1916. 1 fr. 9½ x 6½.

PHYSICAL GEOGRAPHY

GEOLOGY AND GEOMORPHOLOGY

CASE, G. O. **Coast erosion and protection.** 50 pp.; diagrs., ills. Case Coast Protection Corporation, New York, 1915. 9 x 6.

This pamphlet, based on an article published at the time in *Engineering News*, gives a very good, concise summary of the principles of shoreline action viewed from the standpoint of the engineer. The author is connected with a company interested in exploiting certain methods of coast protection described in the article; but it would be a mistake to dismiss his well-illustrated pamphlet as advertising literature of no special merit. One will not often find a more accurate and up-to-date statement of the elementary principles controlling the movement of littoral drift and the causes of coast erosion than are contained in the two dozen pages which the author devotes to these subjects.

"After carefully studying the conditions on the Atlantic and Pacific coasts" the author has reached the conclusion "that as a general rule the littoral drift is mainly due to oblique wave action" rather than to tidal or other currents. The theory of a modern subsidence of the New Jersey and adjacent coasts is rejected, in view of the results obtained in the most recent investigations of this problem. Both of these positions seem to the reviewer to be well taken, though neither is in accord with the formerly accepted views of most physiographers and engineers. Further indications that the author has himself observed carefully, and has at the same time kept in touch with the work of others, will be noted by the reader. DOUGLAS W. JOHNSON

HORNE, JOHN. **The influence of James Geikie's researches on the development of glacial geology.** Ill. *Proc. Royal Soc. of Edinburgh*, Vol. 36, 1915-16, Parts I-II, pp. 1-25. [Concludes with a list of Geikie's publications.]

IDDINGS, J. P. **Igneous rocks: Composition, texture, and classification; description and occurrence. Vol. 1:** xi and 464 pp.; diagrs., ills., index. **Vol. 2:** xi and 685 pp.; maps, diagrs., bibliogr., index. John Wiley & Sons, New York, 1909 and 1913. Vol. 1, $4.50; Vol. 2, $6.00. 9 x 6 each.

LUGEON, MAURICE. **Le striage du lit fluvial.** Ills. *Ann. de Géogr.*, No. 132, Vol. 23-24, 1915, pp. 385-393.

MEUNIER, STANISLAS. **A theory of terrestrial volcanoes and the geography of the moon.** *Journ. Washington Acad. of Sci.*, Vol. 6, 1916, No. 19, pp. 637-649.

NAVARRO, L. F. **L'état actuel du problême de l'Atlantide.** Maps. *Rev. gén. des Sci.*, Vol. 27, 1916, No. 14, pp. 425-429; No. 15-16, pp. 459-466. [See also article by same author listed in *Review*, Vol. 2, 1916, p. 488.]

RIES, HEINRICH. **Economic geology.** 4th edit., thoroughly revised and enlarged. xviii and 856 pp.; maps, diagrs., ills., index. John Wiley & Sons, Inc., New York, 1916. $4.00. 9 x 6. [The first edition of this standard work was extensively reviewed in the *Bull. Amer. Geogr. Soc.*, Vol. 38, 1906, pp. 293-394. The third edition was noticed *ibid.*, Vol. 43, 1911, p. 219. In the present edition there have been "included a description of the more important Canadian mineral deposits, as well as brief reference to some of the well-known ones of other countries."]

WRIGHT, W. B. **The interglacial problem.** *Scientia*, No. 64-68, Vol. 22, 1917, pp. 87-94. Bologna.

HUMAN GEOGRAPHY

Anthropology and Ethnology

KEITH, ARTHUR. **The antiquity of man.** xx and 519 pp.; maps, diagrs., ills., index. Williams and Norgate, London, 1915. 9 x 5½.

This work deals with the problem of man's antiquity from the standpoint of the human anatomist. The author discusses in elaborate descriptions the skeletal remains of ancient man, particularly with regard to finds made in England. To the Piltdown man he devotes much space.

The book is an indication of the attention paid in recent years to the study of our prehistoric ancestors. A parallel interest on this side of the Atlantic is manifested by the publication among others of Professor Osborn's "Men of the Stone Age" and Madison Grant's "The Passing of the Great Race." To the geographer all these studies contain suggestions of paleo-geographical and racial problems which deserve attention.

DROOP, J. P. **Archaeological excavation.** x and 80 pp.; diagrs., index. Cambridge University Press, 1915. $1.00. 8½ x 6.

FRAZER, J. G. **Questions on the customs, beliefs, and languages of savages.** 51 pp. Cambridge University Press, 1907. 6½ x 4.

HILZHEIMER, M. **Urgeschichte des Menschen.** (Naturwissenschaftl.-Technische Volksbücherei der Deutschen Naturwissenschaftlichen Gesellschaft. No. 74-75.) 98 pp.; ills. Theod. Thomas Verlag, Leipzig, [1915]. 40 pf. 6 x 4½.

HOUGH, WALTER. **The distribution of man in relation to the invention of fire-making methods.** *Amer. Anthropologist*, Vol. 18, 1916, No. 2, pp. 257-263.

—— **Man, The origin of.** Ills. *New York State Museum Bull. 173*, pp. 143-156. Albany, 1915. ["Adapted from a paper by Dr. E. Rivet of the Museum d'Histoire Naturelle, Paris, printed in *Biologica*, March 15, 1914."]

OSBORN, H. F. **The origin and evolution of life upon the earth.** Maps, diagrs., ills., bibliogr. *Scientific Monthly*, Vol. 3, 1916, No. 1, pp. 5-22; No. 2, pp. 170-190; No. 3, pp. 289-307; No. 4, pp. 313-334; No. 5, pp. 502-513; No. 6, pp. 601-614.

WALLIS, W. D. **The influence of anthropology upon history.** *Scientific Monthly*, Vol. 5, 1917, No. 5, pp. 433-438.

ZIMMER, G. F. **The use of meteoritic iron by primitive man.** Ills. *Nature*, No. 2462, Vol. 98, 1917, Jan. 4, pp. 350-352.

Economic Geography

Production

SCHERER, J. A. B. **Cotton as a world power: A study in the economic interpretation of history.** 452 pp.; bibliogr., index. Frederick A. Stokes Co., New York, 1916. $2.50. 8½ x 5½.

A book in the field of economics and history, but of interest also to geographers. This history does not cover the ground of the well-known supplementary readers on cotton, but it may be considered as supplementary to them. The history of cotton opens in the hazy realm of folk tales and tradition, passes rapidly into the early use of cotton in India, and then to the introduction of cotton into England. The transformation of England under the increasing growth in the use of cotton cloth is followed by the story of cotton in American history; first, a sectional evolution, then great political controversies as manufacturing establishments increased in numbers, the Civil War with the resulting cotton famine in England and France, and finally reconstruction with the beginnings of cotton manufacturing in the South. The book ends with an admirable section entitled "Cotton and World Trade," which summarizes the situation of the cotton market just previous to the war, the effect of this war upon cotton, and the future possibilities. If the book has a fault, it is its neglect of the influence of other factors and commodities in the development of England and the United States and its placing too high a value upon cotton as "king."

ROBERT M. BROWN

—— **Agricultural legislation, International yearbook of (Vol. 5, 1915).** xcii and 1460 pp. Internatl. Inst. of Agric., Rome, 1916. [Text in French, analytical introduction and table of contents in English.]

ALBES, EDUARDO. **El maíz.** Ills. *Bol. Unión Panamericana*, Vol. 43, 1916, No. 4, pp. 429-448.

—— **Antimony ores, Occurrence and utilisation of.** *Bull. Imperial Inst.*, Vol. 14, 1916, No. 3, pp. 389-417.

BAEKELAND, L. H. **Renewing the earth from the air: The romance of the search for nitrogen.** Ills. *Scribner's Mag.*, Vol. 60, 1916, No. 5, pp. 547-556. [Abstracted under the title of "Production of Synthetic Nitrate" in the February, 1917, *Review*, Vol. 3, p. 153.]

BELLET, DANIEL. **La production de la potasse dans le monde.** *Ann. de Géogr.*, No. 137, Vol. 25, 1916, pp. 377-382.

BELLET, DANIEL. **Un métal d'avenir: le vanadium.** *L'Économiste français*, 44th Year, 1916, Vol. 1, No. 8, pp. 230-232.

—— **Cobalt ores, Occurrence and utilisation of.** *Bull. Imperial Inst.*, Vol. 14, 1916, No. 3, pp. 417-437.

—— **Copper industry in 1914, World's.** Ills. *Mining and Engineering World*, Vol. 42, 1915, No. 6, pp. 266-278.

—— **Copper production in 1915, The world's.** Ills. *Mining and Engineering World*, Vol. 44, 1916, No. 6, pp. 242-244.

—— **Cuivre, Le commerce et l'industrie du, pendant les hostilités.** Ills. *La Nature*, No. 2214, 1916, Mar. 4, pp. 150-155.

GEERLIGS, H. C. P. **De suikerindustrie in verband met den wereldoorlog.** *Indisch Genootschap Vergaderingen*, 1915, Dec. 13, pp. 51-69.

—— **Gold in 1915, The world's production of.** Ills. *Mining and Engineering World*, Vol. 44, 1916, No. 6, pp. 231-233.

HITIER, HENRI. **Les réserves de bétail dans le monde.** *Ann. de Géogr.*, No. 134, Vol. 25, 1916, pp. 81-96. [Abstracted in the February, 1917, *Review*, Vol. 3, pp. 150-151.]

KRAWANY, FRANZ. **Internationale Papier-Statistik.** viii and 250 pp. Verlag für Fachliteratur, Berlin and Vienna, 1910. 10½ x 7½.

MACFARLANE, J. J. **The cocoanut and its many products.** Ills. *Commercial America*, Vol. 14, 1917, No. 2, pp. 13, 15, 17, 19, and 21.

Distribution

—— **European economic alliances: A compilation of information on international commercial policies after the European War and their effect upon the foreign trade of the United States; also an analysis of European and united commercial inter-dependence and treaty relations.** 118 pp. National Foreign Trade Council, New York, 1916. 25 cents. 9 x 6.

This little volume contains a good deal of information upon a question of vital interest to this country. It shows how the trade of the world was organized before the outbreak of the European War, and what portion of it has been disorganized since the outbreak of hostilities. It sketches the evolution of European commercial policy for the past century and emphasizes the significance of commercial treaties between nations as the basis of their trading relations. The resolutions passed at the Economic Conference of the Entente Allies held at Paris in 1916 are given in full, as well as the interpretations and explanations made by responsible representatives of the British and French governments. The proposed economic alliance of the Central Powers is also discussed. Finally, there is given, in detail, a tabular analysis of the trade of the United States with the warring nations. This shows, as one might expect, the predominance of the Allies in both our export and import trade. AVARD L. BISHOP

BERGLUND, ABRAHAM. **The war and trans-Pacific shipping.** *Amer. Econ. Rev.*, Vol. 7, 1917, No. 3, pp. 553-568. [Dislocation of former competitive conditions in the Pacific; the advantage of Japan; disadvantage of the Pacific Northwest of the United States. Referred to in the February *Review*, p. 77.]

HESS, R. H. **The waterways and commercial evolution.** Diagrs. Reprint from *Annals Amer. Acad. of Polit. and Soc. Sci.*, No. 895, 1915, May, pp. 1-24.

O'GORMAN, MERVYN. **Commercial aeronautics.** *Journ. Royal Soc. of Arts*, No. 3394, Vol. 66, 1917, pp. 38-48 (discussion, pp. 46-48).